

M&SV #1

COMBINATION CAR



Research and Restoration Report



THE MONTEREY & SALINAS VALLEY RAILROAD

Combination Car #1

Research and Restoration Report

By

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And

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California State Railroad Museum

Department of Parks and Recreation

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PREFACE

This report is one of a continuing series of reports on equipment being restored by the California State Railroad Museum. It is one of the Museum's first efforts in preparing a research paper on the restoration of a single piece of antique railroad rolling stock, in this case, the 1874 Monterey & Salinas Valley narrow gauge Combination Car No. 1. It is intended as an in-house document and basically tells what we did and how and why we did it.

The narrow gauge Monterey & Salinas Valley Combination Car, after almost 100 years of use and storage, was in such condition that only 10 to 20 percent of the original car could be used in the restored piece. Its condition was the poorest of the equipment being restored and thus required the greatest effort. To further complicate the restoration, there are no known photographs of the car when it operated on the Monterey & Salinas Valley Railroad.

Though being printed in 1979, this report was written in late 1977. At the time of writing, footnotes were not inserted; however, this does not mean that the restoration was by guess or speculation. All aspects of the restoration were carefully researched and backup material is in the Museum's archives. If there was no concrete data to back up a decision, the decision was made on the best evidence available from our knowledge of railroad practices of the period and practice of the two railroads, the Monterey & Salinas Valley and the Nevada Central, in particular.

The lack of adequate personnel hours and continuing "turnover" of researchers as their nine-month tours end, along with the continuing influx of equipment on which research must be completed prior to the opening of the Museum in 1980, has prevented our going back and inserting footnotes in a report now almost two years old.

Future researchers seeking additional information are referred to the CSRM reports on the other pieces of equipment restored that once belonged to the Nevada Central Railroad and the original research notes for this car. (The report on the Locomotive "Sonoma" explains the narrow gauge concept.)



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California State Railroad Museum

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GENERAL HISTORY

On February 23, 1977, Monterey & Salinas Valley Railroad Combination Car No. 1 arrived at the California State Railroad Museum Restoration Facility in the Unit Shop of the Southern Pacific Railroad's Sacramento General Shops. At this time, physical and documentary research was begun to determine the original appearance of the car when it was built in 1874, and to understand the changes the car underwent during its years of service on the M.&S.V.R.R. and later on the Nevada Central Railroad.

This was one of two identical passenger cars built for the M.&S.V.R.R. by the Carter Brothers Car Company in a temporary shop set up in Monterey, California. It represents the Carter Brothers first attempt at passenger car construction. Prior to this time, their experience was limited to the construction of freight equipment. With the closest narrow gauge car builders located in the east (Jackson & Sharp, in Wilmington, Delaware; Billmeyer & Smalls, in York, Pennsylvania; Barney & Smith, in Dayton, Ohio; and others), and faced with a long delay and expensive shipping costs, the \$3,000 a car that this local builder charged did not seem too expensive to the new railroad company.

As early as 1868, interest in building a railroad had been generated in both Monterey and Salinas, with the preliminary survey for the "Monterey and Natividad Railroad" commissioned by a San Francisco Company, Holliday and Brenham, who operated a steamship line and were engaged in building a railroad in Oregon. Engineer John F. Kidder completed this survey, but the line was never built.

The arrival of the first Southern Pacific Railroad freight train on the newly completed route through Salinas in 1872 did little to improve the situation and, because of the high freight rates, interest was again raised in having a locally owned railroad to provide an outlet for the Salinas Valley farmer's wheat directly through Monterey to waiting ships.

Kidder was hired as Chief Engineer and Superintendent of Construction for the "Monterey & Salinas Valley Railroad", which was built in 1874, financed by prominent local land owners and farmers, and was 18-1/2 miles long when completed.

The major construction problems of the railroad, which included spanning the Salinas River with its quicksand and sub-surface channels, and the building of a 1,000 foot wharf in the bay at Monterey, added to the expense and aided in the demise of the company less than five years after it was formed. The expenditures were to continue to exceed the earnings after the first year. After flooding on the Salinas River and the loss of the railroad bridge, lessening local support, and pressure from Southern Pacific, the company was sold in foreclosure by Sheriff Chris Franks on December 22, 1879, at public auction for delinquent taxes. The Pacific Improvement Company paid \$128,557.97 in gold coin for all the assets, property, and equipment of the little company, including: two engines, two passenger cars, eight box cars, forty flat cars, two iron cars, and two hand cars. The Pacific Improvement Company was owned by the Southern Pacific Railroad.

The building of the cars was directed by a Mr. Geiser, foreman of the Carter Brothers Car Company operation in Monterey, and was started in early June,

1874. As the cars approached completion, they received frequent mention in the local newspapers. The Monterey Weekly Herald noted that the roof of both cars was fabricated by a local tinsmith, W. W. James, assisted by a Mr. Cox. The passenger cars were to receive two coats of paint and the seats were described as being placed in the "usual form". They were 42 feet 9-1/2 inches long from link and pin coupler to coupler, 8 feet 5-3/4 inches wide over the eaves, and 11 feet 4 inches high at the clerestory roof, according to measurements made when the car was disassembled in 1977. There were nine windows on each side of the coach, with a bulkhead dividing the passenger section from the baggage compartment. The car frame was covered with board and batten siding.

The first of the two passenger cars was completed and made its maiden run to Salinas on October 23, 1874, heralding the initial success of the small narrow gauge railroad built in the shadow of the powerful Southern Pacific Railroad. They were used on the twice daily runs, with special excursion runs added on the weekends.

In late 1875, both of the cars were repainted by J. P. "Jim" Langford, a local house, sign, carriage, and ornamental painter. The first car completed reportedly looked such that "it presented the same appearance as when new".

The first record of the railroad carrying the U. S. Mail is found in the Report of the Postmaster General of the United States, 1878-79, mentioning that the existing mail contract was adjusted on 03-12-1879. No other reference to this original agreement is made in previous years reports, and the 1872-73 report was not available, so the exact date the contract was

entered into has not been documented. It has been inferred from other published sources that the mail contract was obtained a short time after the railroad began regular service, probably sometime in early 1875, which seems to be a reasonable conclusion. Sacked mail was listed as being carried in the baggage compartment, and there does not appear to be specification for any special construction features in the cars. A second bulkhead, between the seventh and eighth windows, dividing the car into three sections, was added shortly after it was first put into service. This construction required modification of the interior and the resulting changes in the paint scheme may explain the reference to the repainting of the car in late 1875, so soon after it was built.

Little is known of the physical appearance of the twin combination cars in their years of service on the Monterey & Salinas Valley Railroad, since no photographs of them have yet been found. It would appear that negotiations between the Pacific Improvement Company and the Nevada Central Railway were well underway before the sale on December 22, 1879, since the Battle Mountain Messenger notes on December 20, 1879, the arrival and the fact that "the new passenger car was run out a short distance for a trial and found to work to a charm". The arrival of the second combination car is noted in a subsequent article on February 7, 1880, when "the Nevada Central received a new passenger coach last Monday".

The earliest photograph we have of the car shows one of the combination cars and Nevada Central Engine No. 5, the "Gen. J. H. Ledlie", repainted, but still bearing a number plate showing the number 12 it supposedly ran under on the North Pacific Coast Railway. This picture appears to have been taken in early

1880, just after both pieces of equipment went into service on the Nevada Central. There is no reason to believe the exterior of the car had been markedly changed from its appearance when in service on the Monterey & Salinas Valley Railroad. The car is shown with the original nine windows, vents in the clerestory, what appears to be board and batten siding, open or strap steps, small needle beams, truck limiting chains, a suggestion of "U"-shaped pedestals, and has been relettered "Nevada Central Railway" on the letterboard (see Appendix B, Photograph #1). This, and a second photograph we have tentatively dated 1885-86 (see Appendix B, Photograph #2), shows some detail not as clearly visible or defined, but still interpreted from the picture. Fixed windows in the clerestory become more apparent, and we can see the "U"-shaped pedestals in greater detail. The simple design pedestals, so designated because of their appearance, were in common usage in the mid-1870's narrow gauge equipment built by such companies as Jackson & Sharp and Billmeyer & Smalls. The truck depicted in this picture will continue to be a focal point in the history of the car and one of the most complex and difficult to explain in relation to the documentation and the physical evidence from the car.

The combination car came to the Nevada Central Railway to help fulfill another local dream of a small railroad to link the Lander County seat, Austin, with Battle Mountain, some 94 miles north and with the outside world via the Central Pacific Railroad which passed through there as it crossed the continent.

The Nevada Railway, as it was originally called, was formally organized at a meeting held in San Francisco on March 25, 1878. On April 1, 1878, the

company incorporated under the general laws of the State of Nevada. The survey was completed and staked by July, 1878, by Lyman Bridges, who later went on to build the line. Lack of funding left the railway a paper railroad until September 15, 1879, when the newly incorporated Nevada Central Railway assumed the operation with the transfer of the surveys and franchises of the railway. The race was on to complete the narrow gauge line by the February 9, 1880 deadline when the Lander County bond subsidy expired at midnight. It was because of the interest of a New York financier, Anson Phelps Stokes, that the railroad became a reality. A founder as well as a partner in Phelps Dodge, it was his intention to develop Nevada silver properties in much the same manner as his company was developing copper in Arizona. Already an investor in the Manhattan Silver Mining Company, he was anxious that Austin have outside rail connections and, for that reason, he arranged for the bond financing. The railway reached the Austin city limits and, with some last minute help from the city fathers, the last spike was driven not a minute too soon. The Nevada Central Railway was in business.

Newspaper accounts indicate that the Nevada Central obtained a U. S. Mail contract in October, 1880, and, in later post office reports, the mail was noted as being carried in the baggage compartment of the cars.

In August, 1881, both coaches ran together on the passenger train. One was used for mail, express, and smoking, and the other strictly for passengers. On September 16 of the same year, one of the cars was scorched in a small fire while parked on the siding at Clifton Depot, below Austin.

In late December, 1881, all of the Nevada Central box and flat cars were painted yellow. In keeping with the general sprucing up, all of the buildings were repainted a "light drab", reportedly giving them a fine appearance. Then, on January 13, 1882, the Lander Free Press noted "the Nevada Central Railway Managers deserve credit for their taste in the color given their cars, buff is a color that will not be affected by the alkalai dust, and aside from that it is strange to all other roads". Going on, the article describes the coach "Silver State" as recently completed and apparently painted the same color. Research on both the combination car and the coach has substantiated this article, since the same "buff" color appears in both of their early paint layers. September 9 of the same year, the newspaper reported that "the Nevada Central coaches have received a fresh coat of varnish and now look as bright as when new". This would lead to the conclusion, based on the paint research, that the car was "buff" when it arrived from California. The car was simply relettered after painting out the letterboard in 1880, and, after running on the line for over eight months in the harsher Nevada climate, was revarnished, as this article and the physical evidence point out (see Appendix C: Paint Research).

The next newspaper reference to the combination car occurs in 1886, when the car was apparently rebuilt and modified to the seven window configuration. It is possible that the trucks might have been replaced at this time, but that will be discussed in greater detail in Appendix A.

Financially, the railroad had not been doing well. It was purchased in June, 1881, by the Union Pacific Railroad Company, but the situation continued to deteriorate. In October, 1884, the Nevada Central was allowed to default on

its bonds so that the Union Pacific could dump the failing and unprofitable company. Charles W. Hincholiffe, the Railway's General Superintendent, was appointed receiver by the court on January 28, 1885, and plans for the reorganization of the railroad began to take shape. On June 21, 1888, when the Nevada Central was sold in foreclosure, Anson Phelps Stokes, one of the original bondholders, purchased the line for \$200,000, and conveyed it until August 15, 1888. On that date, the reorganization occurred and the par value of the capital stock and long-term securities issued by the carrier was \$500,000 less than the par value of the Nevada Central Railway's securities which were outstanding on the date of its demise (\$2,000,000).

November 1, 1888, the line officially became the Nevada Central Railroad, a new company composed of the Railway's original bondholders who had incorporated as the new company in March of that year.

During this period of seeming instability and change, from 1885 until 1888, the railroad started to improve its equipment and to do the much needed repairs it had postponed.

On August 19, 1886, The Central Nevadan of Battle Mountain mentions a passenger car we feel is Combination Car No. 1, being placed back on the line after undergoing a complete rebuild. Master Mechanic Parise received much of the credit for doing the work in a first class manner and reportedly at less cost than comparable work had been done before. By coordinating physical research and comparing old photographs, it was found that the car had been modified by expanding the baggage section. This was done by removing the second bulkhead, then repositioning the original baggage bulkhead in between

the seventh and eighth windows, siding over two windows on each side. The entire car was resided with tongue and groove siding, the vents in the clerestory were removed, and the clerestory windows were modified to open. A new relocated vent for a single font lamp appeared in the center of the coach section. This composite information is taken from the car itself and from a second photograph which has been tentatively dated as 1901, and which shows the exterior modifications of the car (see Appendix B, Photograph #4). Interior paint research substantiates the major structural changes at about the 1886 date mentioned in the newspaper.

Engine No. 2 was thoroughly overhauled and a new Master Mechanic, W. E. Killen, appeared in 1887. Work on the coaches was to continue with Combination Car No. 2 being "remodeled throughout from truck to roof,...with its new upholstering, floor, trucks, ceiling, and coat of paint...", and in November, the coach "Silver State" was refitted and repainted throughout "...A double floor has been put in the car...". Engine No. 1 received a new spark arrester and an Allen and Richardson balance valve.

No specific mention of any of the cars has been found from the 1887 entry until the early 1890's when the "Silver State" coach is highlighted several times in the local newspapers when it is used for special trains.

October 27, 1892, is the date an accident occurred 20 miles south of Battle Mountain which caused the passenger coach and two or three box cars to run off the tracks. The accident was caused by a broken rail, but no details of the extent of damage were included.

On July 25, 1895, The Central Nevadan offers the first report on one of the cars and leads us to believe that the passenger equipment may be again undergoing a period of revitalization.

One of the N.C. passenger coaches is now undergoing a new coat of paint and other repairs at the shops which is being painted a dark brown and the lettering on the car is very pretty and done in an artistic manner. It will be some time before the coach will be ready for use but when it comes out it will shine up like a new silver dollar besides making a better appearance to the road.

The first Annual Report of the railroad available is 1897, and it mentions the equipment, saying that "...of the two combination coaches, No. 1 is in good order and No. 2 is in the shop having been thoroughly overhauled..."

In the Annual Report of 1898, Coach No. 1 is listed as in good running order but in need of light repair. In 1899, both Coach No. 1 and Coach No. 2 need paint badly. 1900 finds Coaches No. 1 and No. 2 having been painted and varnished, but Coach No. 1 is mentioned as needing to be painted when it comes into the shop again.

In 1901, Coach No. 1 is overhauled and repainted. A photograph discussed earlier (see Appendix B, Photograph #4) is believed to depict the repainted and overhauled car at this time. The men in the picture are workmen; the carpenters and painters of the Nevada Central Shops, posing with their handiwork. Most noticeable, other than the numbering on the car, is the addition of conventional cast pedestals to the trucks. The car, upon arrival at the Restoration Facility in 1977, had 1897 Carter Brothers cast pedestals with A. French double-coil nest springs cast in August, 1897.

Paint research on the trucks show the parts which were added during the modification all have the same number of layers of paint, all beginning with the same color. The evidence for another pedestal design was demonstrated by paint with trim striping under these newer pedestals, which was found before the photograph showing the "U"-shaped pedestals on the car was located. In trying to correlate the paint on the trucks with exterior colors prior to 1901, it becomes difficult to substantiate that these trucks were indeed on the car when it was built. This line of thinking leads to the conclusion that this set of trucks may have been added to the car sometime between the time Photograph #2 and Photograph #4 were taken (see Appendixes B and D), either during the rebuild in 1886 or after 1897.

In 1907, the first contract with Wells Fargo & Company was obtained and the requirements the Nevada Central had to meet were spelled out in Article VII, which stated:

The Railroad Company agrees to maintain the cars, accommodations, and facilities herein provided for in first class serviceable condition, including the lighting and heating and lettering of the cars used for express purposes with the name of Wells Fargo & Company Express.

The contract was dated July 19, 1907, and was to be in force until July 1, 1917. It was to be renewed for 10 years at that time, but the contract was no longer recognized in the mid-1920's. In a series of photographs dating after 1907, the combination car is shown with the required lettering (Appendix B, Photograph #5). The only visible changes in the car are vents for a double font lamp, pane glazing in the baggage end door windows, and the use of an early style "circulating" stove vent.

The economic base for the railroad was beginning to shift with the closing of most of the silver mines by the mid-1890's. The transportation of livestock to the railhead at Battle Mountain assumed new importance and added greatly to the slim revenue of the line. In the early 1900's, the line was seen as the base for the Nevada Midland to be built through from Austin to Tonopah, which was then experiencing a period of mining expansion and prosperity. In 1905, the route was surveyed, but due to lack of financing the line never became a reality.

Some of the last Annual Reports to mention the condition of the cars were in 1902 when

the passenger equipment consists of combination coaches 1 and 2 and passenger coach "Silver State", which is in good condition. Coach No. 2 is now in the shops for a new wheel, and alignment, and minor repairs. Each car has been equipped with air brakes and Janey Couplers.

In 1904, it was again mentioned that "all three passenger cars are equipped with air brakes and automatic couplers". 1906 finds reference to "one coach was rebuilt in our shops during the year". Since Combination Cars No. 1 and No. 2 were overhauled in 1901 and 1897, respectively, the car mentioned was probably the coach "Silver State".

It was during this period that John Merr Hiskey came to the company as an auditor and was to remain, becoming the General Manager in 1913, and the lines staunchest defender until it was abandoned in 1938.

Starting with two passenger and one freight train daily, the Nevada Central opened with a flourish but soon dropped to one train a day, and for many years

there was at least this daily train. By 1900, service was reduced to three trains a week, and by 1905, only two. Later, a train ran six days a week, but it was most often a small motor car carrying the mail and little else. The locomotives were used when they could pay for themselves, often being used only a few times a month.

In 1898, the Austin Mining Company suspended operations and other local mining activity continued to diminish, virtually ceasing after 1911 in the Austin area. New business for the railroad came from the mines in Berlin in 1903, and from Manhattan and Roundhouse in 1907.

In early February, 1910, flooding took its toll, shutting the line down until regular service was resumed on May 30. In 1911, increasing demand for livestock in the east provided the revenue for a peak business year. Then, in 1912, with the last of the mines closing, these livestock shipments kept the line alive. It was not until 1916 that the mining industry would bring important business back to the Nevada Central with the opening of the copper mines at New Pass and Dillon.

In the Annual Report for 1912, it was mentioned that "both coaches and the 'Silver State' have been repainted and are in first class condition, part of the work being completed in the fiscal year 1913". In 1914, the new motor car, No. 103, was built and, along with its predecessors, it eventually replaced the passenger equipment and the steam trains.

On Friday, November 26, 1915, one of the coaches was ditched when it hit a broken rail. In the Battle Mountain Scout the following week, an article was

reprinted from Austin's Reese River Reveille describing the incident. The conductor jumped from the car as it left the tracks and the lone passenger rode it out, escaping injury amid:

tumbling car seats and flying glass...It is the opinion at the offices of the company that the rail was broken by the engine as it went over the spot, all cars holding the track until the rear trucks of the coach went on the ties.

The coach was practically demolished....

The mention of possibly extensive damage in this article is not carried into the Annual Report for fiscal year 1915, when only \$199.35 was listed for car repairs. Since other records of the Nevada Central indicate they had carried insurance with Home Insurance Company of New York since 1912, it may be that the damage was covered by the policy they held on the rolling stock, so repair costs were not included in the total figure given in the reports. Attempts to find out more information from the insurance company have yielded no answer.

We have not been able to conclusively determine whether or not Combination Car No. 1 was the car involved, but it is always a possibility. Extensive replacement of parts of the car, including the floor, could have been necessitated by an event such as having the seats torn loose.

March 1917 found high winds in Battle Mountain and the coach house was blown over, throwing two coaches on their sides. We have been unable to determine the extent of the damage to the equipment.

From 1915 until abandonment, very little money was spent on equipment repairs. An exception was during the year 1922, when "\$794.13 for car repairs" is noted in the Annual Report. Nothing has been found detailing these repairs. Some reports are missing in these later years, but those available show that very limited funds were used for maintenance.

Through the 1920's, the railroad continued a marginal existence. On July 27, 1927, Combination Car No. 1 was damaged when the coach house burned. Corporate correspondence notes that Hartford Insurance was reluctant to pay the claim until a list of expenses was sent. Ensuing letters noted that the repairs necessitated the company "...using an old coach and repairing this one as opportunity offered, so that repairs have not been completed". In April, 1928, the final "cost of the repairs, \$538.88, the amount recoverable under the insurance policy of the Hartford Fire Insurance Company No. 10383 is \$400".

Physical evidence on the cars superstructure show that, prior to this date, fire damage originating from the stove caused the removal of the seventh window, nearest the baggage area, on the left side of the car. The fire in 1927 appears to have caused exterior damage sufficient to require the residing of the entire car, and much of the baggage section of the car on the left side shows repairs. But this information was not enough to explain visible differences in the paint chronology. The siding boards from the right side of the car had seven definite layers of paint but, on the left side, only half of the car had seven layers. From a double-tongued board inserted in the siding near the sixth window, which changed the direction the siding was applied, to the baggage end of the car at the corner post, there were only six layers of

paint on the siding. This would indicate that this second residing of the car on only part of the left side occurred some time not long after the 1927-28 residing of the entire car.

Recent conversations in November, 1977, with Herbert Merrill, the last surviving engineer from the Nevada Central Railroad, working on the line from 1927 until its abandonment, has added the information that might solve this puzzle. He recalls an incident that occurred in the early 1930's when a gasoline tank car and one of the combines caught fire after having run off the tracks and overturned near Ledlie. The accident itself didn't cause the fire but, after most of the gas had been removed and the truck was returning for the last load, carelessness with a cigarette started the blaze. The truck was completely destroyed, but it appears that the combine wasn't severely damaged. This could explain the residing of the car.

From all information available regarding the damage to the combination car and its final subsequent repair, it appears that the final painting was never completed. The car appears to have been taken into the shop after the last incident in the early 1930's, and it was still there in 1938 when Ted Wurm photographed it inside the car shed (see Appendix B, Photograph #7). The physical evidence from paint on the car siding is in agreement with this with the brown car body partially repainted the new dark green and the letterboard on the only half completed on the left side.

After the gasoline motor cars were placed in service, the passenger cars were seldom used and sat in the Battle Mountain Shops. The Nevada Central started operating its own bus line in 1927 because it was losing much of its slim

business to traffic along the Lincoln Highway through Austin. At the end of the year, the line was turned over to an affiliated company, Nevada Central Motor Lines, locally known as Hiskey Stages. John Merr Hiskey was active in the company and, at that time, also held the titles of Secretary, Treasurer, General Manager, Superintendent, and Auditor for the railroad.

With the corporate charter about to expire, the company petitioned for abandonment and the road was abandoned on January 31, 1938. Most of the rails and equipment were sold to Hyman-Michaels, scrap dealers, for \$22,500.

The intervention of Gilbert H. Kneiss, on behalf of the Pacific Coast Chapter of the Railway and Locomotive Historical Society, and the generosity of Mr. Hiskey and Hyman-Michaels, prevented the destruction of the Combination Car No. 1, the coach "Silver State", Locomotive No. 5, and Locomotive No. 6. Locomotive No. 2 was also saved and has been restored by Ward Kimball, an employee of the late Walt Disney, as the "Emma Nevada" on his private "Grizzly Flats Railroad".

All of the Society's equipment was moved to San Francisco where it was elaborately painted and lettered to portray the Union Pacific and Central Pacific equipment that met at Promontory Point, Utah, in 1869. They were first used in the 1939 "Cavalcade of the Golden West", staged at Treasure Island during the Golden Gate International Exposition. The scale for the event was grand, from the huge sets to the large casts of people and animals. It didn't matter that the equipment was narrow gauge, no one cared.

Each locomotive steamed onto the stage under its own power, pulling one of the passenger cars, and they both met in the center. The steam was photogenically enhanced by special equipment and smoke deflectors.

In 1940, the show was renamed "America, Cavalcade of a Nation". In an interview with Mr. Holman Lenhart, the promotion director for the Cavalcades, he pointed out that the shows varied little, with the expansion of acts in 1940 to include America from the arrival of Columbus, hoping to attract a new audience. The combination car was relettered from the large "U.P.R.R." in 1939 (see Appendix B, Photograph #8) in 1939, to "Union Pacific R.R." in 1940 (see Photograph #9).

After the close of the Exposition, the cars were moved to the Pacific Guano Works, across the bay in Berkeley. They remained there until vandalism forced their move to Moore Drydock Company in Oakland, on August 5, 1960. At that time, the combination car's body was covered with a coat of white lead paint to slow the damage by weathering. The elements continued to take their toll (Appendix B, Photograph #10).

The car was painted by the Society in the late 1950's, or early 1960's. It was painted red with silver lettering "Monterey & Salinas Valley R.R.", and this is the way the car appeared when it arrived at the Restoration Facility. It had one more move before it was to come to its final home with the Museum. About 1964, it was moved to the Key System storage area in Oakland (Appendix B, Photograph #11).

In February, 1977, both the combination car (Appendix B, Photograph #12) and the coach "Silver State", arrived in Sacramento. The end of the line promises a new beginning for the Combination Car No. 1 as it becomes an exceptional display of early 1870's railroad equipment in the California State Railroad Museum (Appendix B, Photograph #13).

PHYSICAL ELEMENTS OF THE CAR

The combination car underwent extensive physical research after its arrival at the Restoration Facility. The following represents the findings and some of the questions that these findings raised.

The car is 42 feet 9-1/2 inches long from coupler to coupler, 8 feet 5-3/4 inches wide over the eaves, and 11 feet 6 inches from the rail to the center of the clerestory roof.

FRAMING

The cars frame, as originally built, employed fairly typical construction for the period. Six sills were used: two side sills, two intermediate sills, and two center sills. Crossing these sills were the body bolsters, needle beams, and floor supports. The sills, as originally designed, were too weak to support the car body adequately, and were reinforced with random length sill members, one new sill per each original sill, attached on the inside of each. This work was most likely done by the later owners, the Nevada Central. To the earlier modifications, "X" bracing was later used to further strengthen the frame, and giving the car an unusual structural appearance.

The superstructure, or body framing, followed a simple and cheap practice, not unlike the design shown in the 1879 Car Builder's Dictionary, for a Metropolitan Elevated Railroad of New York mass-transit coach. No compression

beams, braces, or counter braces were used. The plate, side, and end bulkhead framing were held to the floor by vertical iron tie-rods, which were bolted tight at each end of the rod.

Sagging was prevented in the coach by a pair of truss rods, which were attached singly at each end sill with nuts. These rods were kept taut by adjusting a turnbuckle at the center of the rods. On arrival, the truss rods rested on cast iron queenposts. In the earliest historical photography of this car, no queenposts were evident. Instead, the truss rods rested on small cast iron chairs or pads. These were replaced between 1874 and 1901 with the adjustable queenposts, similar, if not identical, to those used on the Nevada Central coach "Silver State".

EXTERIOR

Trucks

The four foot wheelbase passenger car trucks found under this car are quite different from the standard pattern five foot wheelbase trucks found under later Carter Brothers cars. The trucks show ongoing modification and have several features that posed interesting questions regarding the development of this form of narrow gauge truck.

Complete with standard cast pedestals bearing a casting date of 1897, the original disassembly and inspection of the truck components revealed several inconsistencies in the design and fit of these parts. The cut outs in the beams did not fit these pedestals well. The car had seven of the Carter cast

pedestals and one 1875 Kimball cast pedestal, which fit worse than the Carter design. Blocks had been nailed with wire nails to support the outer edge of these pedestals. Modification from overhanging to underhung suspension was evident, as were several seemingly unnecessary bolt holes. The paint and modification of these trucks is discussed in more detail in Appendix F: Truck Design and Modification.

Body

Over the basic framing, 3-1/4 inch plain beaded tongue and groove siding had been applied on the exterior, with screws at the center and nails at the top and bottom edges. Trim moulding was kept to a minimum.

Roof

The roof was originally covered with zinc coated tin, approximately .015 inch thickness, or 28 gauge tin. It was installed by lap seam, using various sizes of tin squares, the common size being 9 inch by 13 inch, with larger or smaller sizes used to fit as the curve of the roof dictated. The edges of tin were held in place with square roofing tacks and the soldered. The roof was then primed and painted. Very late in the patching effort, the entire roof was tarred.

The tin on the clerestory roof was original, having both sets of lamp holes, the original single font and the later double font lamp. There was random patching in the tin. The lower deck had been completely redone with new tin at least once. The replacement tin is a little thicker than the original.

INTERIOR

Coach Section

On the interior, over the basic framing, went the window panels, window sills, sub fascia, lining, and wainscoting above the truss planks. The flooring consisted of two layers of fir, a layer of sawdust, and a deafening ceiling on the exterior underside of the car.

The ceiling consisted of tongue and groove fir siding nailed to the rafters. This was made up of three-inch fir boards, with three holes cut into it for the ventilation of two different types of kerosene lamps, one of the single font variety and the other a double burner type. These holes were capped on the outside with tin cans soldered to the roof, and covered inside with sheets of galvanized tin, tacked in place. A traverse carline supported the roof and the clerestory. The carlines were faced with strap steel for reinforcement, which was bolted into place, one on each side of the two bars.

The toilet, or saloon as it was called in the 19th century, was located in the far right corner of the passenger section at the outside door. The interior contained only a dry hopper, as no running water had been designed into the car. No urinal or wash basin was present.

The coach had fifteen windows total in the passenger area: one window in the left side end bulkhead, six windows on the left side and seven windows on the right side, with one window in the end door. All the windows were of the

single pane variety. Each baggage door had three small single panes of glass near the top, one each in line with the recessed door panels. These were clear window glass.

The clerestory contained a total of twenty windows, five of which opened on pivot, per side. Opening windows began at the passenger end and continued in a pattern opening every other window. The opening windows were held closed by small, sprung latches located at the center of the window frame. Several of the clerestory windows had been obviously replaced without the benefit of framing; the glass was simply tacked into place with wire brads. The clerestory windows were encased in mahogany frames.

Side windows were encased in opening mahogany frames, which slid upward into a cavity behind the interior sub fascia and the exterior letterboard. Each window was opened by depressing a thumb latch on the bottom right side of the window frame while simultaneously pulling up on a brass window-lift. Once opened, the windows were held in place by the latch bolt resting on a brass window latch stop. Each passenger window, including the saloon window, had a mahogany "French" window blind that also telescoped into a cavity behind the sub fascia panels. The blinds were raised in the same manner as the windows and ran inside a grooved area of the window casing and were held in open or raised position by flat brass springs. The window blinds did not totally block out the light, but diffused it by angling it to the floor. With the window open and the shade down, air was able to circulate through the slats and provide good ventilation without bright sunlight.

Both end doors of the car were of simple wood construction and were later replacements. The original style locking mechanisms were missing and had been

replaced with standard, 20th century deadbolts for home use. The saloon door had a single pane of white-painted glass cut into a gentle arch at the top. There was no latch on this door and it represented the only original door remaining with the car. The passage door in the bulkhead was narrower in width than the end doors and was a typical "house" door.

The truss planks were original and the paint information from them helped to position the second bulkhead.

The car was floored with two layers of fir tongue and groove boards 3-1/4 inches wide and 3/4 inches thick. The floor dimensions were 89 inches wide (26-1/2-inch boards being used) and 35 feet 8 inches long. The surface was smooth and covered with a thick deposit of dirt. The floor did not appear to be original although there was still evidence of much wear and deterioration. In general, the floor was in good condition when compared to other parts of the car. Except for various areas near the outside edges, which had some water damage, the floor boards were sound and reusable for restoration.

There are seven holes through the floor boards, with all but one being less than two inches in diameter. In the right front corner is a late addition drain fixture. Two other drain holes exist in the passenger section along the left side of the car. A fourth and fifth hole exist at the site of the stove. These allow for the anchoring bolts which held the stove to the floor. At the site of the saloon is a hole 26 inches in diameter which allowed for waste disposal from the dry hopper. The one remaining drain hole is in the baggage area.

Behind the stove, the sub fascia panel was removed and the stove shield was then found to be a replacement, added after the bulkhead was moved in 1886. There was also evidence of fire damage to studs in the wall. At the time of the fire, the sub fascia panels and wainscoting on both sides of the car and portions of the coach side of the center bulkhead were replaced, along with some of the baggage side of the bulkhead.

Coach Appointments

The coach area contained eleven flop-over seats, arranged with one seat under each window in the car. One seat, opposite the toilet compartment, was mounted lengthwise to the car, the seat back mounted permanently to the wall under the window. The seat backs and cushions were inconsistently upholstered in dark brown leatherette or leather; the remaining leather was stiff and brittle. The seat bases were cast iron in a simple "heart" pattern, while the rest of the seat frames were of oak construction, stained and varnished. Two of the seats were missing their wide, contoured armrests which had been replaced with very plain oak board with rounded edges. The two seatbacks covered in leather were edged on the top and sides with a wood beading, the rest of the seats having a simple flat metal beading.

On the exterior front saloon wall was a single flat steel strap which acted as a bracket for the drinking water tank, which had been removed from the car. Below the tank location was a small drain and pipe which passes through a short 2 foot by 2 foot cabinet. This cabinet, with its door that opened onto the aisle, could have been used to carry a set of train marker lights, marker flags, and other train supplies.

The Spear Anti-Clinker Car Stove, Model No. 15, is of a simple design made of sheet and cast iron, with numerous decorative designs incorporated into the cast parts. It was located on the left side of the coach, partially straddling an open space in the center bulkhead. It was surrounded on two sides by a tin stove shield which protected the left wall and bulkhead from the high heat emitted while the stove was in use. As the stove provided heat for both the baggage and coach sections, the stove shield opening in the bulkhead was carefully contoured to the relief of the stove. The stove doors and grate vents were positioned facing the baggage room so as to be controlled and fueled from there. The stove flue passed through the ceiling on the coach side.

When the car was originally built, the stove was positioned directly across from the saloon door at the rear of the car. This must have been a poor location for it was later moved to the central location. The car was built without any parcel racks and the first addition was a simple hat/coat hook between every other window. This apparently proved inefficient and some type of parcel rack was then installed.

Baggage Section

The overall interior of the baggage area has been resided with horizontal tongue and groove fir boards. The only remaining original interior siding material is found behind the door cages where the siding is redwood tongue and groove boards.

The baggage section fittings included a coal bin that ran parallel to the left hand wall, a closet on the right hand side, and a corner shelf made of plywood that was placed between the closet and the center bulkhead. There was a foot locker with two top-opening lids that could be used as a bench. There was a single window in the end door, which was of typical housing type, and a fairly recent replacement.

The large side baggage doors had three window panes per door, near the top, and no door pulls on the interior. The doors slid forward on a single iron track without rollers and were contained at the top and bottom by wooden guides. These guides spanned the distance from the inside baggage door stop to the end bulkhead, or double the door width.

In the baggage section, the ceiling was composed of one layer of roof boards, painted, and supported by rafters which were exposed to view. The rafters and carlines were chamfered for a neat appearance along the exposed edges.

The flooring was a continuation of the floor boards in the coach section, constructed of fir, 3-1/4 inches wide by 3/4 inches thick.

Seven iron shield straps cross the floor between the freight loading doors. These straps are 4 inches wide, 87 inches long, and 1/4 inch thick, and were positioned 1-5/8 inches apart. A gap exists within the line of the kingpin access hole. Screw holes in this area indicate another strap crossing this hole once existed.

The truss planks, which are original, run the full length of both sides of the car and helped in the understanding of changes in the baggage section by comparing paint and visible structural changes with the siding and ceiling members.

Third Section

The indications of a second bulkhead in the coach area were found on the truss planks and the top plates. The ceiling boards in the coach section were removed for study and, on the lower roof and the right side near the center bulkhead on this side, a large area of light green paint was found. This paint was on the underside of the sub-roofing, indicating that this section had once been exposed as a section separate from the main coach and baggage sections.

We know nothing about this section other than it existed and when it existed, which we can base on paint research and some historical documentation. It was added after the car had been put in service, possibly during the noted repainting in 1875, and existed until it was removed by the Nevada Central, probably during the rebuild in 1886 (see Appendix C: Paint Research, for further discussion).

RESTORATION

In all restoration performed by the California State Railroad Museum, each individual car or locomotive is examined to determine the amount of work that will be necessary to preserve it. The combination car was in extremely poor condition and required almost total reconstruction. Dry rot, lack of upkeep during the decline of the Nevada Central Railroad, and extensive water damage from outside storage in the moist San Francisco climate, and vandalism resulted in the overall deterioration.

The original investigation started with removing the exterior siding from the center of both sides of the car which exposed three windows, one on the right side and two on the left side, that had been boarded over. These windows were a part of the cars appearance when it was built in 1874. The deafening ceiling was also removed to determine the structure of the car frame. The center and side sills were sound, with only the ends of the side sills requiring replacement. This was accomplished by the use of high density foam poured into molds attached to the piece of wood being repaired and formed to the proper dimensions. It is sounder than wood and, with its use, essentially all of the main frame was saved. Two of the corner posts, and all of the baggage door posts, were saved. All of the hardware was cleaned and primed for eventual reuse.

The roofing tin was taken off so that vent holes might be studied and the original placement of the lamps might be observed. The tin itself was a

replacement, but some original pieces were present and these were analyzed and the roofing we used is of the same gauge and is applied in the same manner as it was originally.

The ceiling was removed and the several bulkhead locations were located. It was also determined that the truss rods in the bulkhead section were added to give strength to the walls and floor as the car started to settle during use.

In addition to the floor, other pieces used in the reconstruction were the saloon door and wall, the truss planks, and the top plates after the ends were renewed by splicing. As already noted, the other wood parts were turning to dust or unsound for rebuilding (see Appendix B, Photograph #14).

The truck bolsters, body bolsters, truck wheel pieces, and the truck iron hardware relating to the Billmeyer & Smalls style "U"-shaped pedestals were set aside for reuse. The wheel sets, though dating from 1908 and 1912 and not original, were also set aside for reuse.

After the original construction details of the car were determined during disassembly, research was started to assess when any modifications occurred. It was hoped that the car could be taken back to its original appearance during its first years of service, before the major structural modifications occurred. Research supported the decision and the two photographs taken as the car first arrived in Nevada (see Appendix B) show the car with board and batten siding, nine windows on each side, fixed clerestory windows with five vents, and "U"-shaped pedestals.

Using the information determined by the physical research, engineer William A. Oden and the draftsmen made measurements and determinations on the rebuilding of the car. The construction details were duplicated, using the same type of wood. Tongue and groove or mortise and tenon were duplicated. Screws were used where they had once been and "square" or cut nails were used. Very few wire nails were used, and then only in unexposed areas to add to the structural integrity.

New platforms were installed, the floor repaired and sanded, and new wall framing was erected. The baggage bulkhead was designed from interior research information and positioned where it was when the car was first built.

Next, the roof was rebuilt. Carlines, deck sills, and deck sill plates were all newly manufactured. Then, clerestory carlines, end panels, and the roofing were installed (see Appendix B, Photographs #15 and #16).

The new roofing was identical to the old one, from the redwood used to the size and shape of the tongue and groove; again, custom cut in our shop. The difficult curve of the soffit board on the clerestory was achieved by back cutting that approximated the original application.

The interior baggage and interior passenger walls were then installed with the related mouldings nailed in place with cut nails. The saloon was reinstalled and then the exterior work was started.

After the decision to restore the car to its early appearance, between 1874 and 1886, the problems of adapting the trucks to suit the car during this time became the chief project of research and engineering. The components were then fabricated from the patterns and castings made from the drawings we developed. Photographs and patent details showing this type of truck from other railroad cars of the period provided us with the necessary detail.

Once the exterior work and siding of the car was finished, before the tin roof was to go on, the car was primed, sanded, and filled, and then reprimed and resanded.

The tin roofing was then installed in the original manner, hand soldered by our master tinsmith. He also fabricated the ten ventilators for the clerestory using an original one as a pattern. The original was located, intact, on an ex-South Pacific Coast caboose-combination car (at Keeler, California) built by Carter Brothers. (This car has since been moved to Newark for possible restoration.)

The two finish coats of paint were then applied, with the trim and striping added as the car was lettered. It is not necessary to varnish the car as was done frequently when in service, because of the difference in the character of modern paints from those originally used. The lettering of the car will be "Monterey & Salinas Valley".

The third section was not used in the reconstruction because, at this point, no information is available to answer vital questions on why it was installed, what it looked like, and what purpose it served. If this information is

obtained, the car could conceivably be modified, just as was done on the Monterey & Salinas Valley Railroad, by removing the ceiling cloth, chamfering the carlines on one side, adding the new bulkhead, and then repainting part of the coach and all of this third or newly created center section.

Physically, the reconstructed car represents its original appearance when built in 1874. It was never a sound car, by railroad standards, as it was poorly built. It was indeed the Carter Brothers first attempt at this specialized construction and this is apparent structurally. By disassembling the car and studying it, we have a new understanding of why the Nevada Central had to continually bolster and repair the car. The only apparent change from the cars original appearance in our reconstruction is the needle beams, which we found were once much smaller. We left them as they were replaced by the Nevada Central. This was done in the interest of keeping the car in sound condition after reconstruction.

The combination car actually represents more than just its historical counterpart, it is an exacting attempt to build a narrow gauge passenger car, duplicating the construction methods and materials of the late 19th century as much as possible.

The car now represents many of the typical features of early railroad cars and the appearance they presented when actually in service during the 1870's. The Monterey & Salinas Valley Railroad Combination Car No. 1 was unique in design and execution and is representative of California's premier narrow gauge car builder.

CHRONOLOGY

February 26, 1874	Monterey & Salinas Valley Railroad chartered; first narrow gauge railroad in California.
April, 1874	Building of M.&S.V.R. commenced, Monterey to Salinas.
June, 1874	Construction of two passenger coaches commenced by Carter Brothers Car Company.
September 11, 1874	"C. S. Abbott", first locomotive, having arrived by ship from Baldwin Locomotive Works, steamed up. Citizens invited on a four-mile excursion run.
October, 1874	Published schedule shows one round-trip daily and two on Sundays.
October 23, 1874	First coach completed. Makes test run.
October 28, 1874	Railroad began operating.
January 28, 1875	Second published schedule, two round-trips, daily and Sunday.
1875	Both passenger coaches repainted.

1875	First mail contract.
Winter, 1875	Salinas River flood. Trestle washed out. Trains held up until April.
Winter, 1876	Another disaster -- Salinas River Bridge washed out.
September 6, 1876	Fire in engine house damages both locomotives and one passenger coach.
Late 1870's	Heavy construction costs, flood damage, etc., foretell financial failure of M.&S.V.R.
December 20, 1879	M.&S.V.R. passenger combine (presumably Combination Car No. 1) delivered to Nevada Central at Battle Mountain, by Pacific Improvement Company, in process of buying M.&S.V.R. Car makes successful trial run.
December 22, 1879	M.&S.V.R. sold at public auction to Pacific Improvement Company (owned by Southern Pacific) for \$128,557.97.
February 2, 1880	Arrival of second passenger coach at Battle Mountain.
February 9, 1880	Nevada Central Railway, incorporated in 1878, completed to Austin, 93 miles south of Battle Mountain.

Fall, 1880	Daily mixed train replaced by full-fledged passenger train with 5-1/2 hour run between Battle Mountain and Austin.
October, 1880	Nevada Central obtains contract for mail, carried in baggage compartment of combine.
June, 1881	N.C. acquired by Union Pacific.
August, 1881	Both coaches ran together on train; one for mail, express, and smoking, the other for passengers.
September 6, 1881	One of coaches scorched in small fire while parked on siding near Austin.
December, 1881	Silver State, "one of the finest narrow gauge coaches ever to ride the rails", built at Battle Mountain Shops. (See separate CSRM report on this car for additional information.)
September 9, 1882	Newspaper accounts say both Nevada Central coaches "received a fresh coat of varnish and look as bright as when new".
August 19, 1886	Combination car back on line after being rebuilt and modified from 9 to 7 window configuration.

November 1, 1888	New company, Nevada Central Railroad, takes over property after line had gone into receivership. Original owners in charge again.
1890's	Silver State used for special trains according to new accounts.
October 27, 1892	Accident 20 miles south of Battle Mountain derailed coach and two or three box cars.
July 25, 1895	One of passenger cars being repaired, repainted.
1897	Annual Report of Nevada Central Railroad states "No. 1 (coach) in good order".
1898	Annual Report: "No. 1 in good order but in need of light repairs."
1898	Austin Mining Company suspends operation.
1900	Service reduced to three passenger trains a week, down from two a day at start of railroad, and one a day before latest curtailment.
1901	Combination No. 1 overhauled and repaired.
1903	New business for Nevada Central from mines in Berlin.

1904 All three coaches now have air brakes and automatic couplers.

1905 Route surveyed for Nevada Midland, Austin to Tonapah (never built).

1905 Service down to two passenger trains a week.

July 19, 1907 Nevada Central signs 10 year contract with Wells Fargo & Co. for express business.

1907 New business comes from mines in Manhattan and Roundhouse.

February, 1910 Flooding closes lines until May 30.

1912 Last of mines close. Livestock shipments keep railroad going.

1912 Annual Report mentions coaches, with special reference to Silver State: "...repainted and in first class repair."

1913 John Hiskey becomes general manager. Became staunch defender of line until abandonment in 1938.

1914 New motor car, No. 103, built.

November 26, 1915	One coach ditched due to broken rail.
1916	Opening of copper mines at New Pass and Dillon brings new business to Nevada Central again.
1917	High winds at Battle Mountain. Coach house blown over; two coaches on sides.
1922	Annual Report: \$794.13 for car repairs.
April 27, 1927	Nevada Central starts own bus line.
July 27, 1927	Combination Car No. 1 damaged; new coach house burned.
April, 1928	Cost of car repairs, \$538.88. Hartford Insurance carrier pays \$400.
1920's	Motor cars replace coaches.
1932	Snow ties up railroad for 60 days.
May, 1937	Gilber Kneiss of Pacific Coast Chapter of the Railway and Locomotive Historical Society "finds" Nevada Central Equipment at Battle Mountain on eve of line's abandonment.

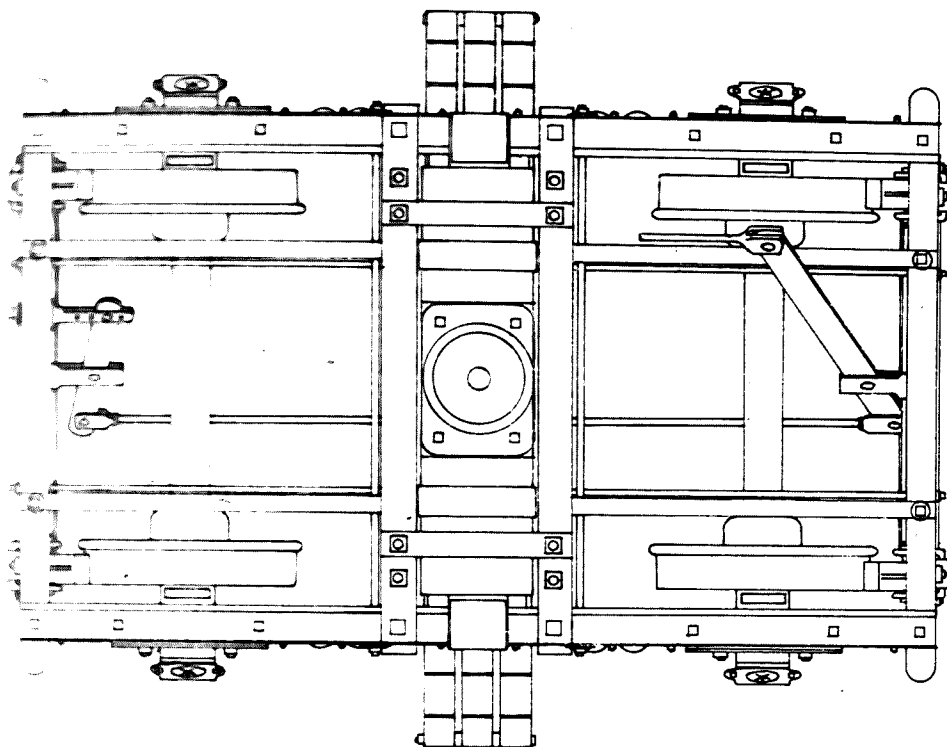
1937	Nevada Central petitions Interstate Commerce Commission for permission to abandon its line.
December 20, 1937	ICC authorizes abandonment.
January 31, 1938	Rail and equipment sold to scrap dealer for \$22,500.
February 2, 1938	Last train ran on Nevada Central.
1939	Mr. Kneiss' persuasion pays off. Railroad donates Combination Car No. 1, the Silver State, and a locomotive to Historical Society.
1939	Equipment is moved to San Francisco and repainted to portray Central Pacific and Union Pacific re-enactment of golden spike ceremony at "Cavalcade of the Golden West" at Golden Gate International Exposition on Treasure Island.
1940	Equipment used at Exposition's second year in new drama entitled "America, Cavalcade of a Nation".
Late 1940	Cars moved to Pacific Guano Works, Berkeley, for storage.
August 5, 1950	Equipment, somewhat the worse for vandalism, moved to Moore Drydock Company, Oakland.

Mid-1960's	Car No. 1 painted by R.L.H.S. with lettering "Monterey & Salinas Valley R.R."
Mid-1960's	Equipment moved to Key System storage in Oakland.
February, 1977	Combination car and Silver State transferred to Restoration Shop in Sacramento.
March 1979	Restoration completed and Combination Car No. 1 moved to storage in West Sacramento to await museum opening.

APPENDIX A:
PASSENGER CAR INVENTORY SURVEY WORKSHEET

PASSENGER CAR SPECIFICATIONSDate: 11/30/78As BuiltBy: K. BunkerCar: Monterey & Salinas Valley R. R. Combination CarBuilder: Carter Brothers Car Co. Builder # or Plan #: -Date Built: 1874 Date Ordered: - Gauge: 3'Type of Car: Combination (Pass./Bag.) Passenger Capacity: 32Wood frame, iron pedestalType of Seats: mohair plush upholstery Number of Sleeping Berths: NoneNumber of Rooms, Compartments, etc.: 1 baggage roomType of Construction: Wood (Panel & Batten), 2 center sills, 2 truss rods with turn buckles.Rods resting on cast iron pad. 2-1½" x 2" fir carlins.Type of Platforms/Vestibules: Open, woodType of Roof: Tin (soldered) over wood and paintedType of Floor: Wood Type of Frame: WoodType of Body Bolsters: None Type of Couplers: Link and pinType of Draft Gear: - Type of Brakes: Hand wheels (ratchet)Manual, friction shoe (iron).Extreme Length of Car: 42' 1" Length over Buffers: no buffersLength over End Sills: 42' 1" Extreme Width: 8' 5-3/4" Width over Side Sills: _____Extreme Height from top of Rail: 11' 6" Height from Top of Rail: _____Light Weight: - Extreme Wheelbase: _____Type of Trucks: Billmeyer & Small Patent (4 wheels)Truck Wheelbase: 4' Type Wheel Bearings: BrassWheel Dia.: 24" Wheel Manufacture & Dates: _____Type of Safety Equipment: NoneType of Heating: Spear Patent Coal StoveType of Air Conditioning: NoneLavatory Facilities: Dry hopperType of Lighting: Kerosene Ceiling Lamp Number of Lighting Fixtures: 1

(over)



CARTER BROS.

PASSENGER CAR TRUCK - 1881

Davenport, Calif. May, 1970

Gauge: 3' 0"

Wheelbase: 4' 11"

Wheels: 22" double-plate

Over end sills: 7' 10 1/4"

Over side sills: 4' 5 1/4"

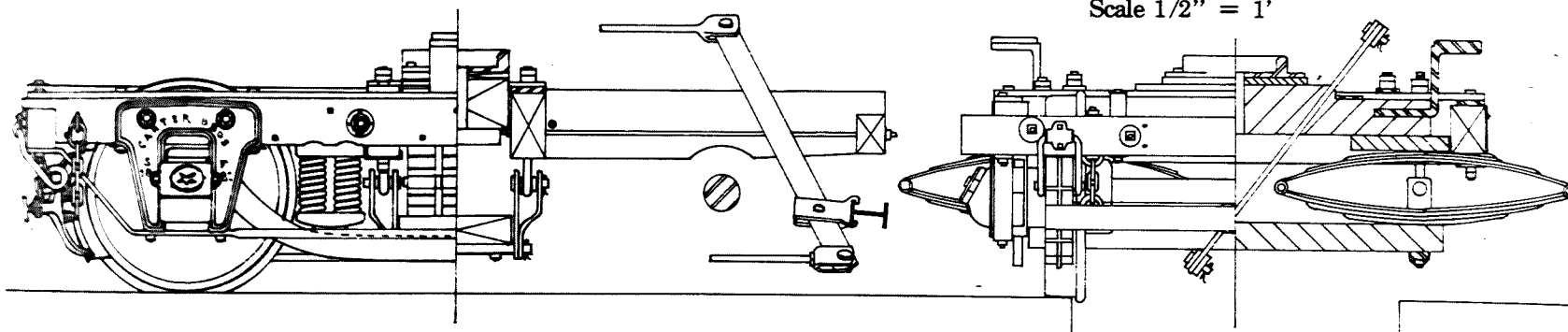
Height to center-plate: 2' 3/4"

[David Soderblom]



GRAPHIC SCALE

Scale 1/2" = 1'



PASSENGER CAR SPECIFICATIONS

(2)

Type of Signal/Train Communication Equipment: Cord

Type of Electrical Generator: None

Obvious Historic Patches/Modifications to Car: (use add'l sheet if req'd)

Owners, Numbers and Dates:

Blt. 1874 Monterey & Salinas Valley (#1?)

Sold 1879 Nevada Central Railway #1

1888 Nevada Central Railroad #1

Painted as 1938-39 Union Pacific Railroad #18 (cosmetic image only-no ownership by UP)

A "third" section, (between the passenger and baggage sections), was added at window locations left 8 and 9/right 8 and 9.

The division between compartments was made by a light-construction false bulkhead of unknown finish. This section may have been added circa 1875-76 for carriage of the U. S. Mails under contract. (See report).

This third section was eliminated in a major rebuild by Nevada Central Railway circa 1885, with the original bulkhead being moved to window 8 - (windows 8 and 9 both sides were covered with siding.) The car was entirely resided with tongue and groove fir, replacing the original panel and batten sides.

Circa 1901, the car's B&S trucks were modified with more typical equalizers, double coil springs and Carter Bros. cast-iron pedestals.

In 1902, the car was equipped with air brakes and automatic knuckle couplers which were removed by the S.P. prior to display at the 1939-40 Treasure Island Fairs. At this time, the brakes were returned to full manual control, and link and pin coupler castings re-applied.

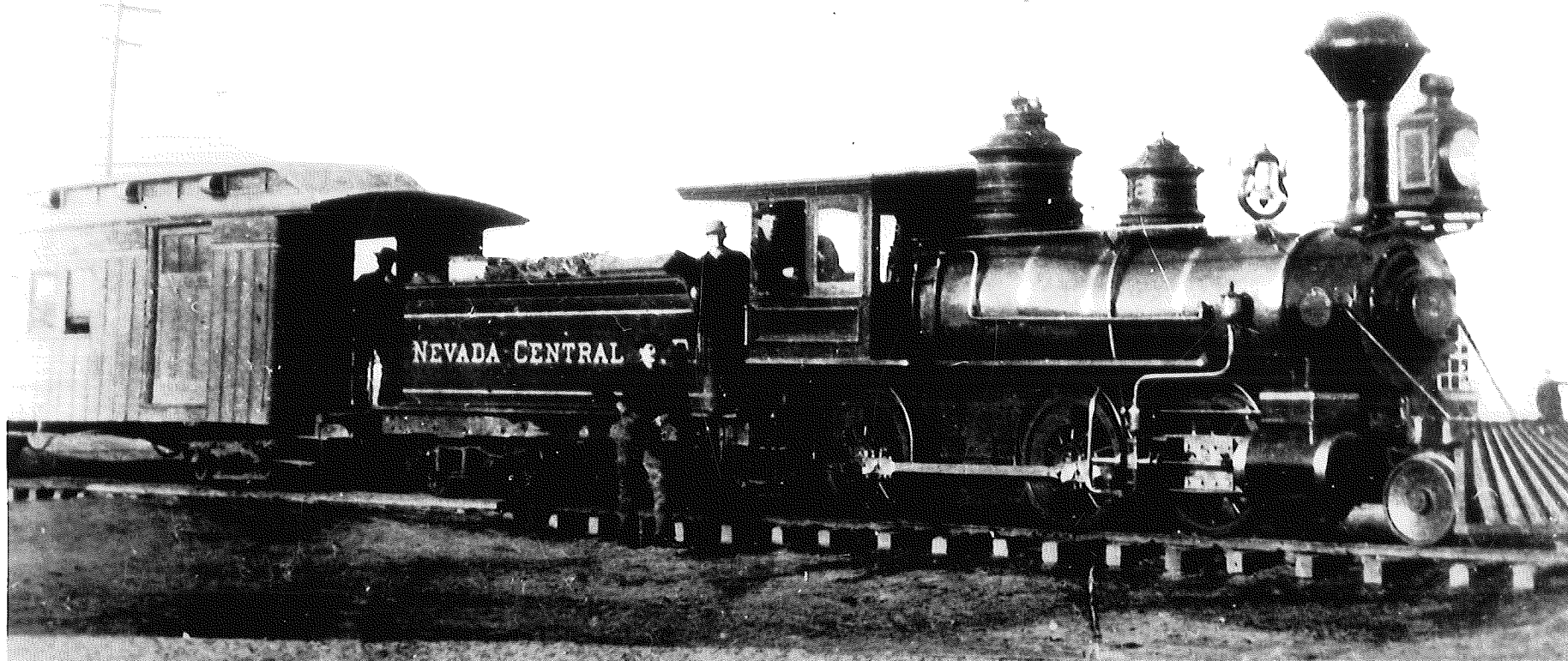
No known photographs of the car on the M&SVRR.

APPENDIX B:
PHOTOGRAPHIC HISTORY, 1880-1979



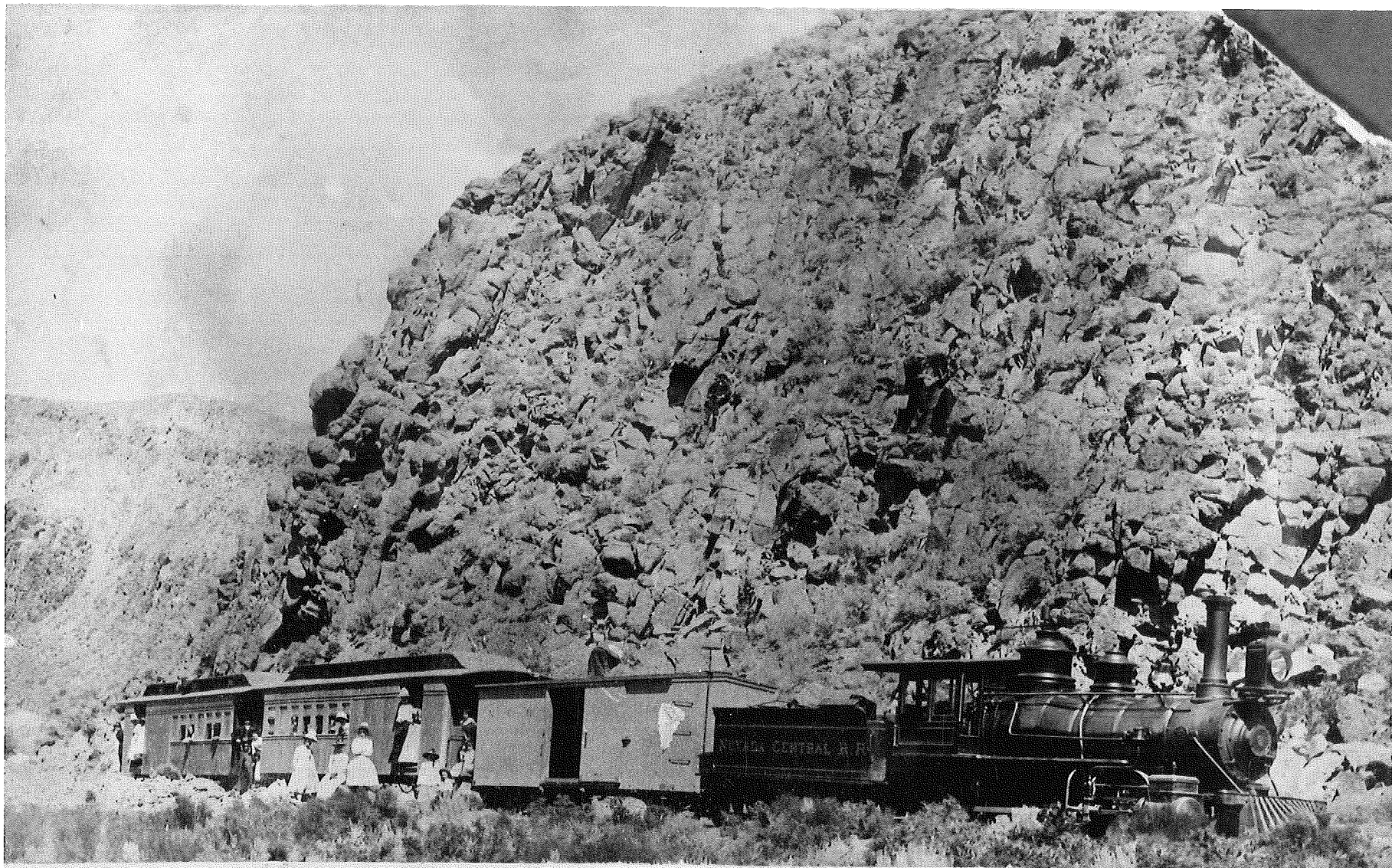
Photograph #1.

A combination car and Nevada Central Engine #5, the "Gen. J. H. Ledlie" at Battle Mountain, Nevada, carrying its Nevada Central #5 on the sand box and the #12 on the number plate. (Ca. early 1880) (Gilbert Kneiss Collection).



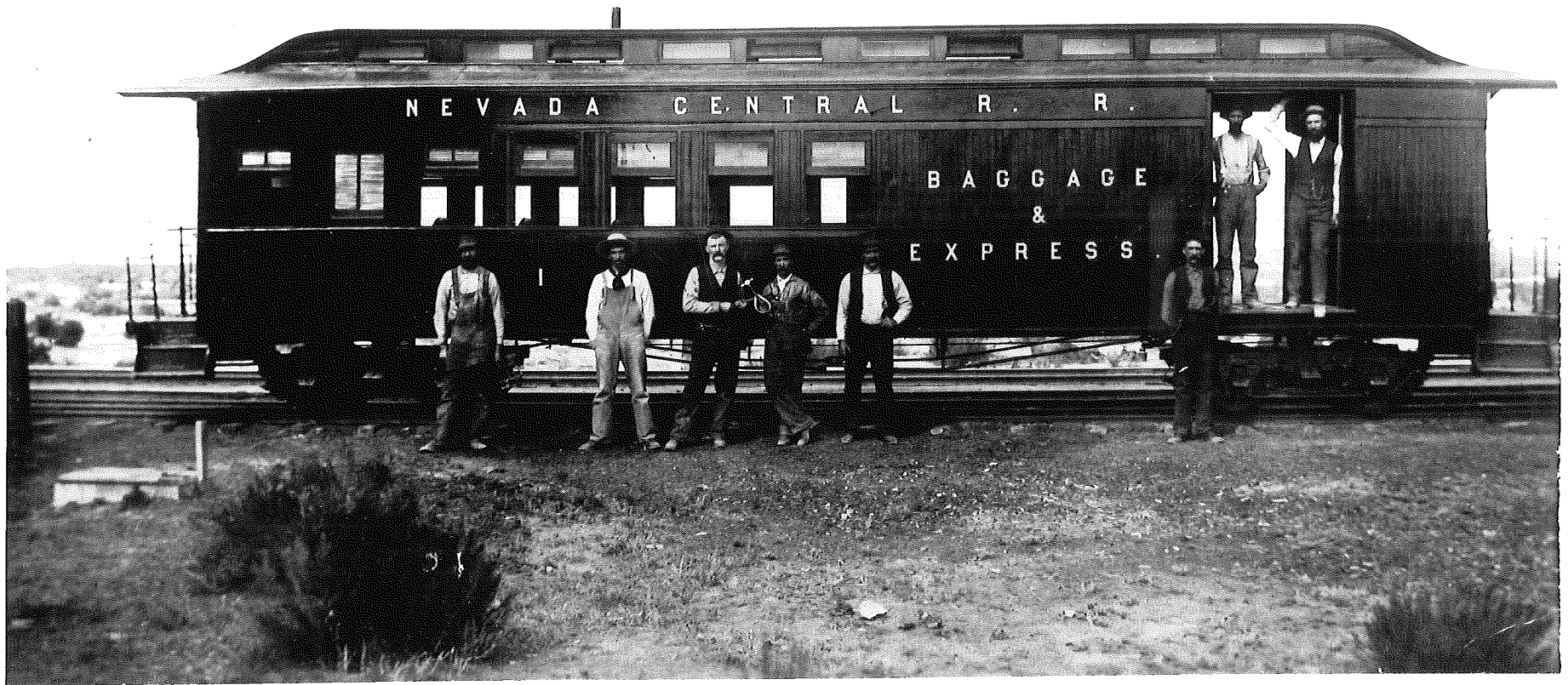
Photograph #2.

Combine showing additional details, i.e., fixed windows in clerestory and "U"-shaped pedestals. (Al Phelps Collection).



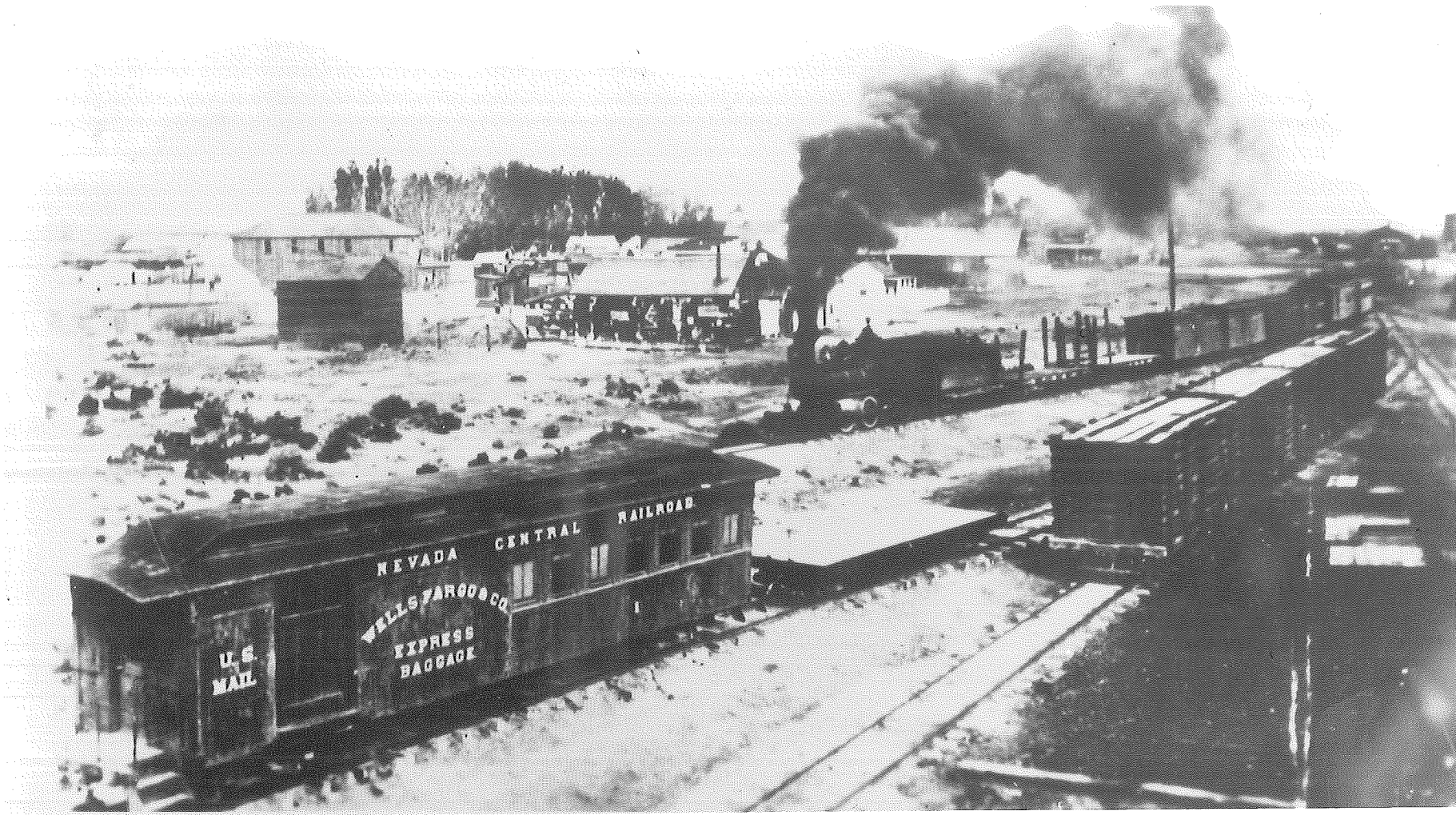
Photograph #3.

Combination cars of the Nevada Central Railroad in the 7 window configuration (post-1886). (Hiskey Collection).



Photograph #4.

"Builders Photo" showing combine after 1901, rebuilt and with conventional cast pedestals. (Hiskey Collection).



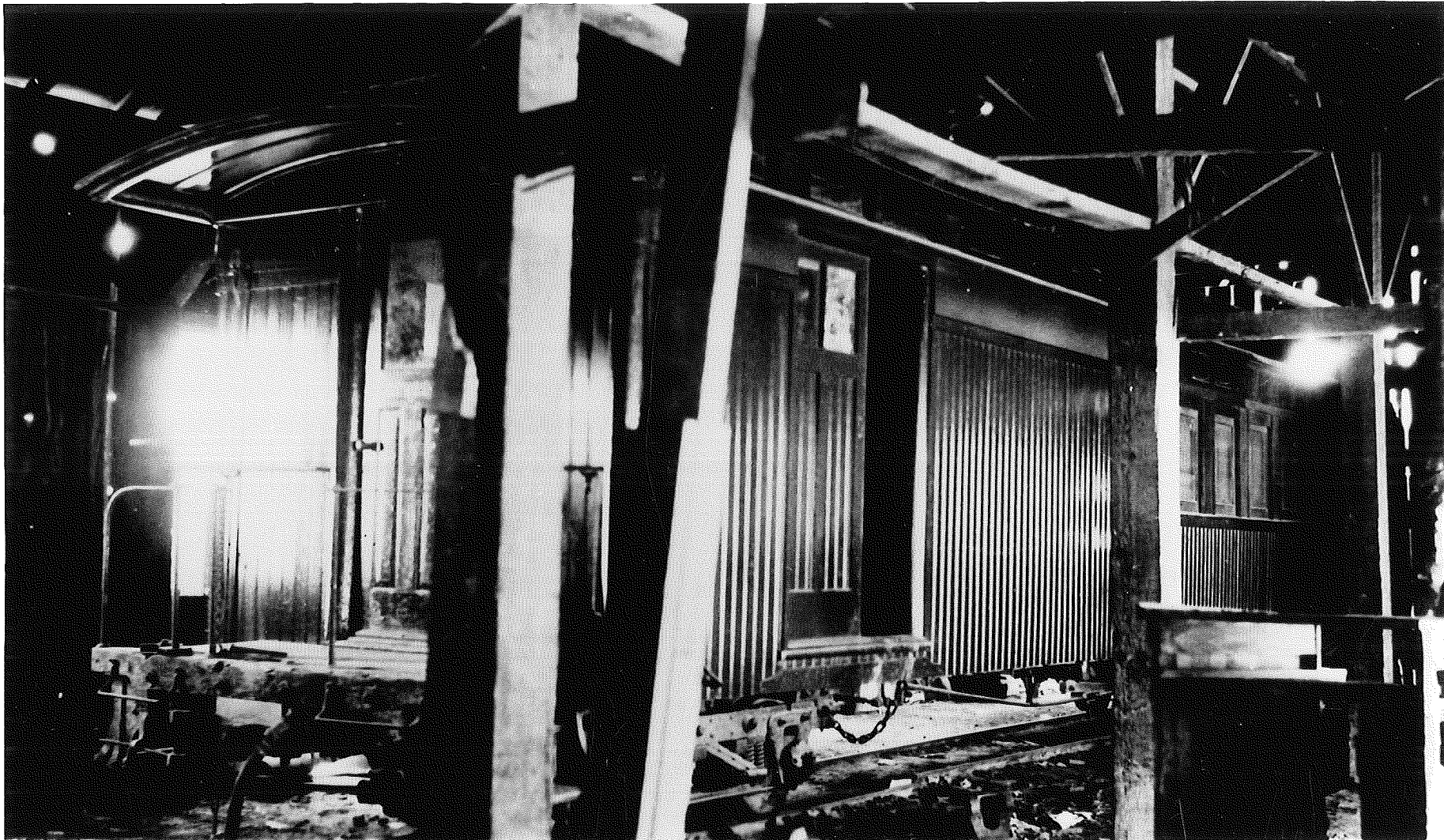
Photograph #5.

Nevada Central combine showing "Wells Fargo & Co." and "U.S. Mail" lettering on the car sides. (Ca. 1907-17) (Ted Wurm Collection).



Photograph #6.

Baggage being loaded on a Nevada Central combine at Battle Mountain, Nevada. (Ca. 1920's) (Hiskey Collection).



Nevada Central Combine No.1 Battle Mtn., Nev/
interior of Battle Mountain car shed

June 1938 Partially repainted green
collection of Ted Wurm-Oakland.



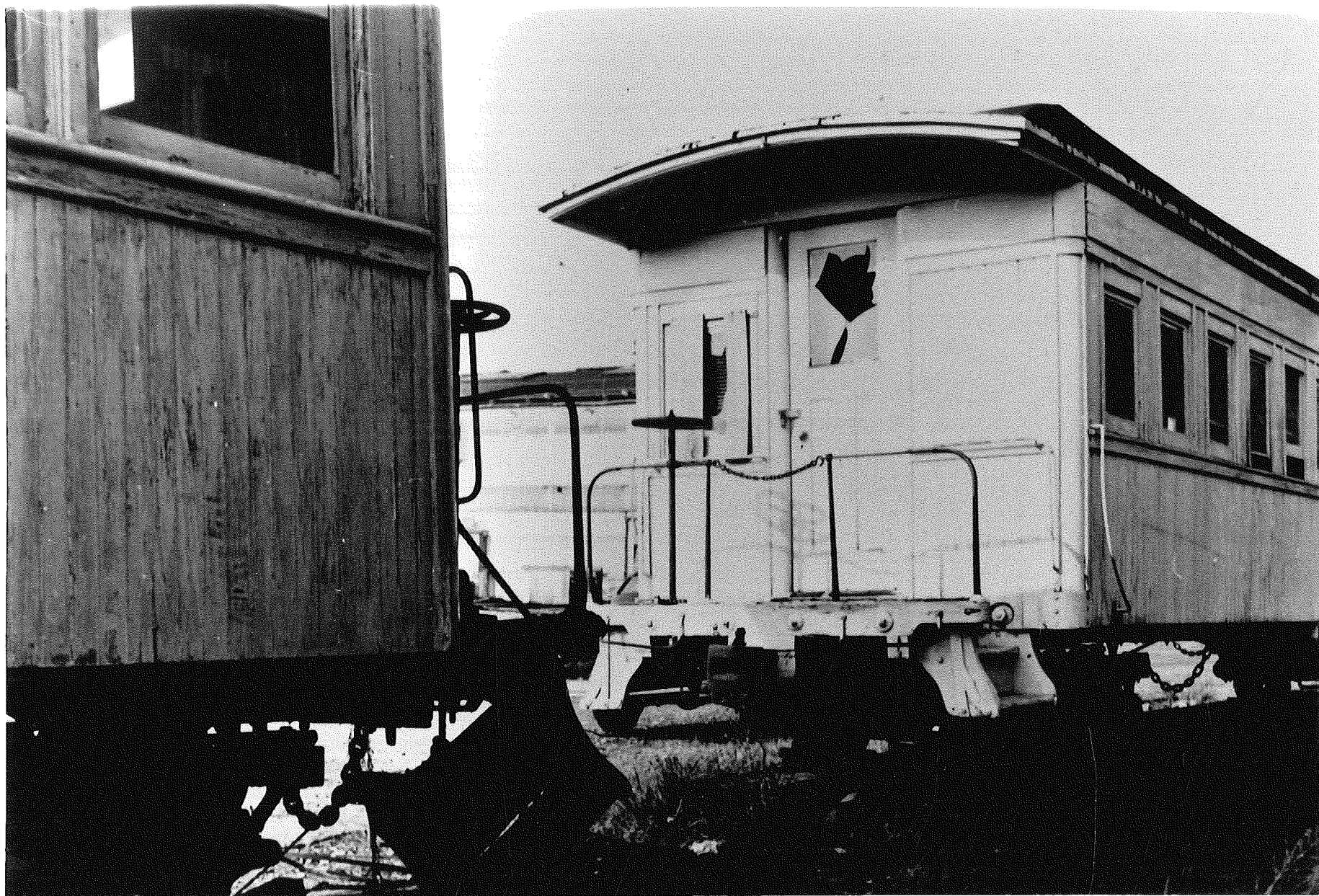
Photograph #8.

The combination car lettered "U.P.R.R." at the Golden Gate International Exposition (Treasure Island, San Francisco) in 1939. (Jackson Collection).



Photograph #9.

The combination car lettered "Union Pacific R.R." as it appeared at the 1940 Golden Gate International Exposition. (Guy L. Dunscomb Collection).



Photograph #10.

The combination car during outdoor storage in the east bay area.
(Ca. 1960's) (Ward Collection).



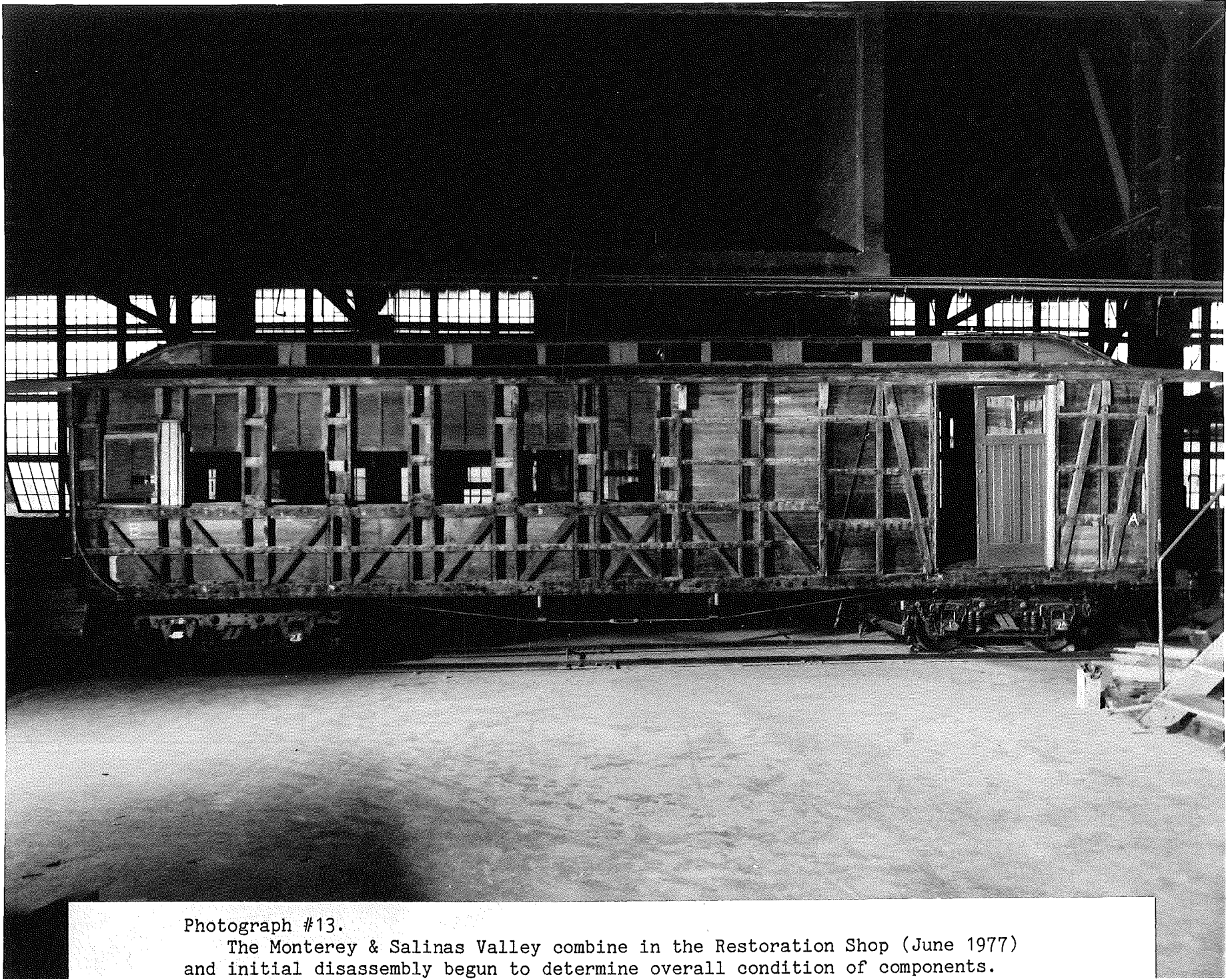
Photograph #11.

The car as it appeared in the Key system storage area in Oakland, California. (Ca. 1964) (Stephen E. Drew Collection).



Photograph #12.

The combine being loaded aboard a "low boy" truck at the old Key system car barn in Oakland for its move to the CSRM restoration shop in Sacramento.
(Stephen E. Drew Collection).



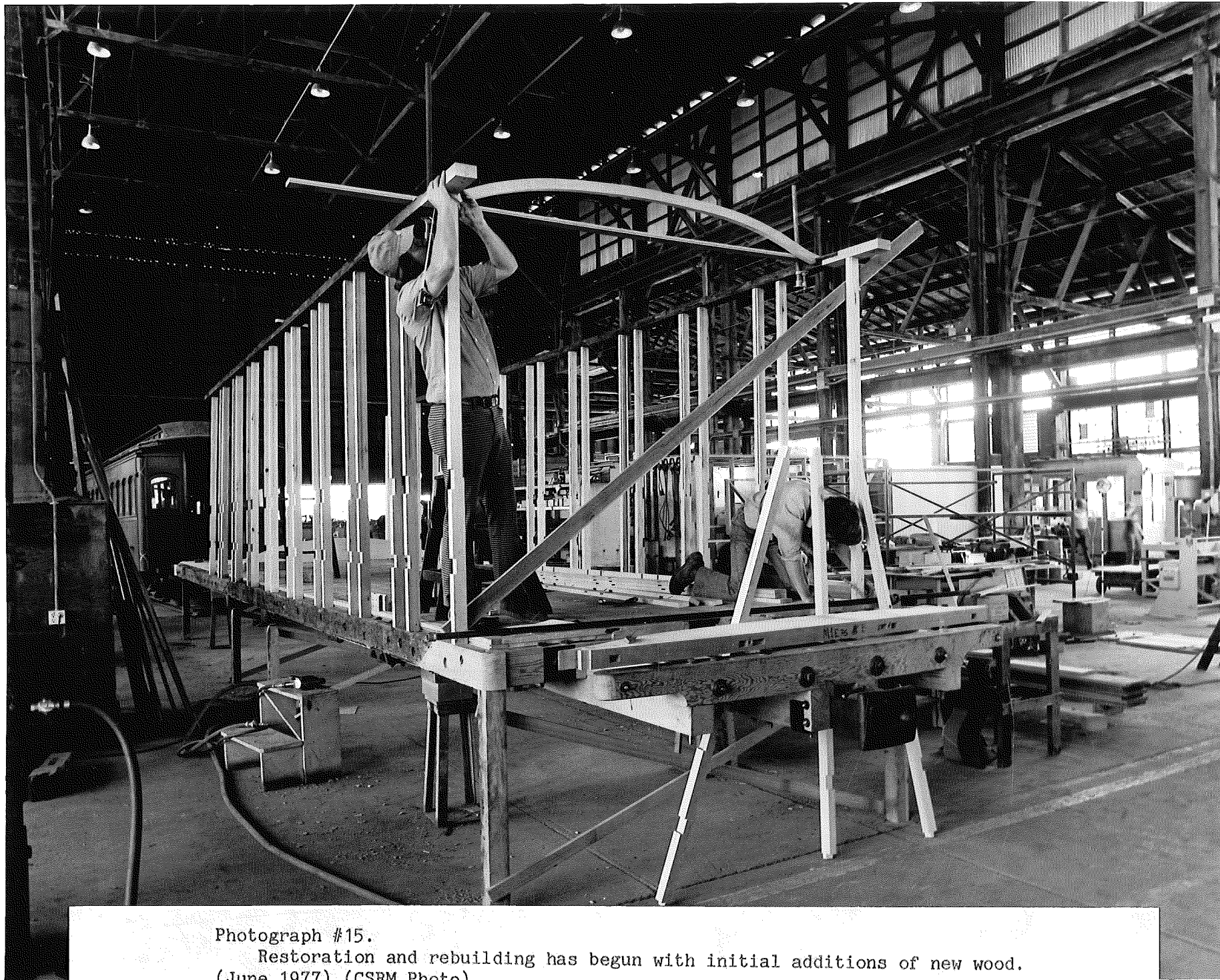
Photograph #13.

The Monterey & Salinas Valley combine in the Restoration Shop (June 1977) and initial disassembly begun to determine overall condition of components. (CSRM Photo).



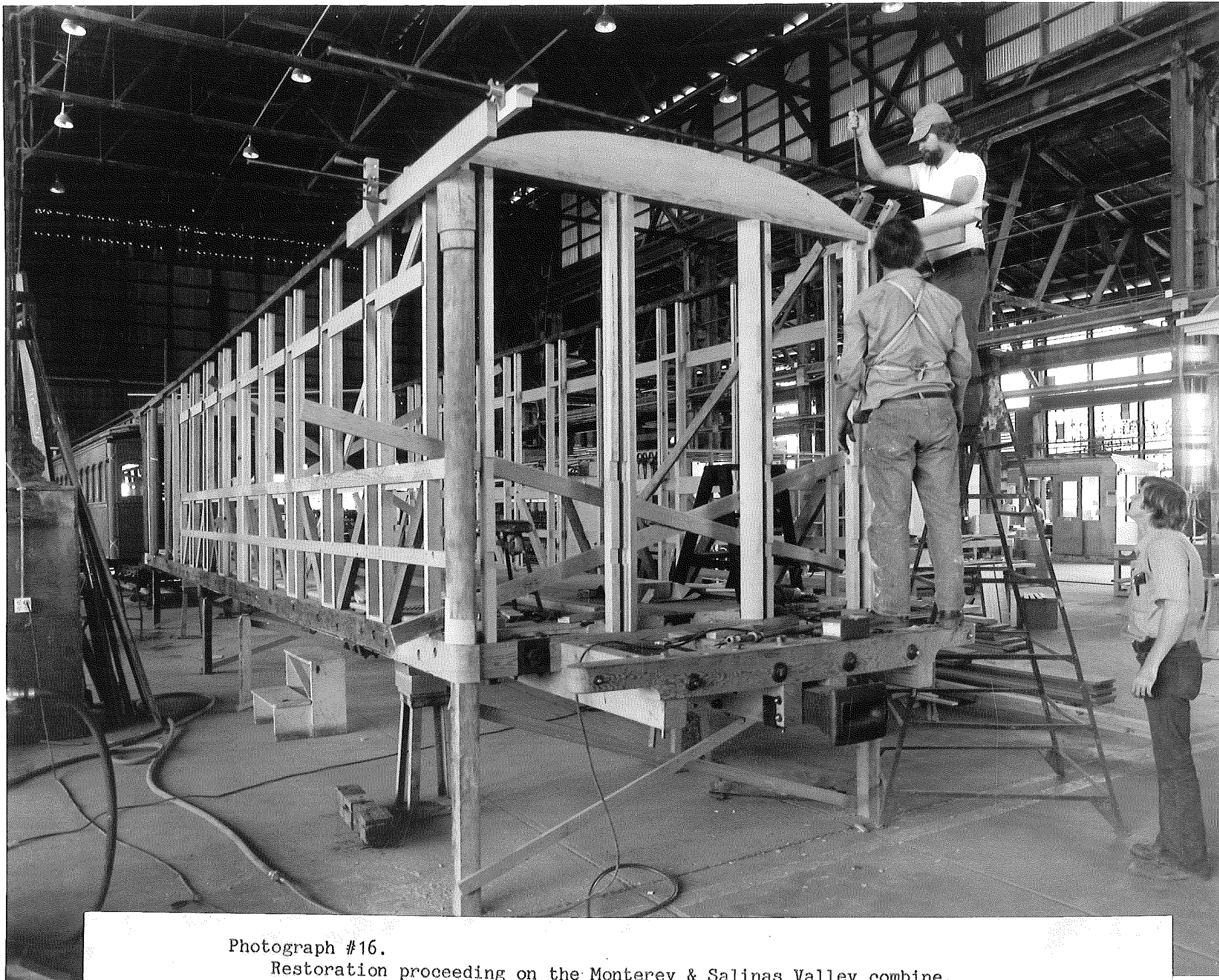
Photograph #14.

The car as it appeared in June 1977 after removal of rotting and unusable parts. Only floor and one partial wall remains to be included in the restored car. Evidence of rot can be seen in the near edge of the car floor. (CSRM Photo).



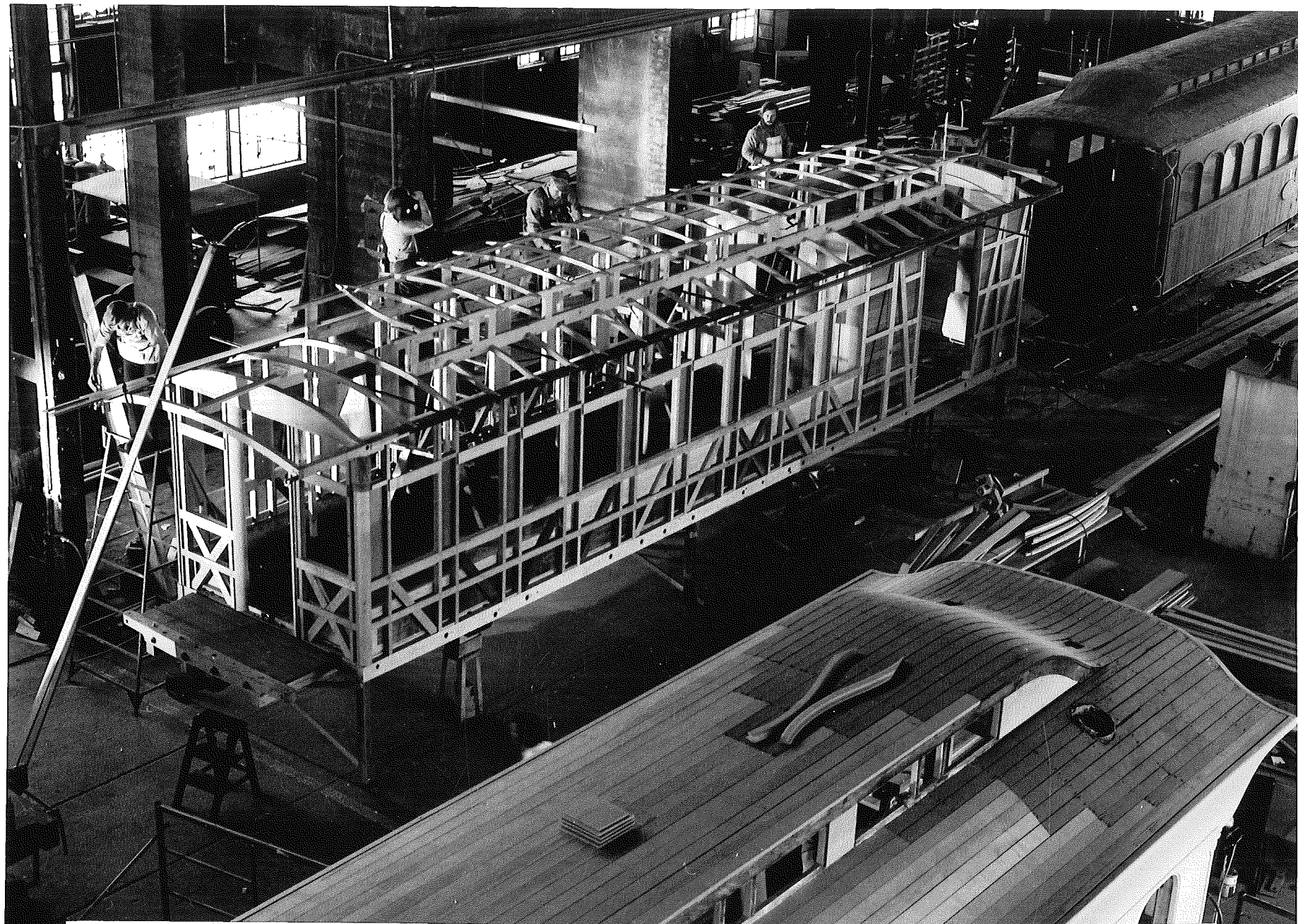
Photograph #15.

Restoration and rebuilding has begun with initial additions of new wood.
(June 1977) (CSRM Photo).



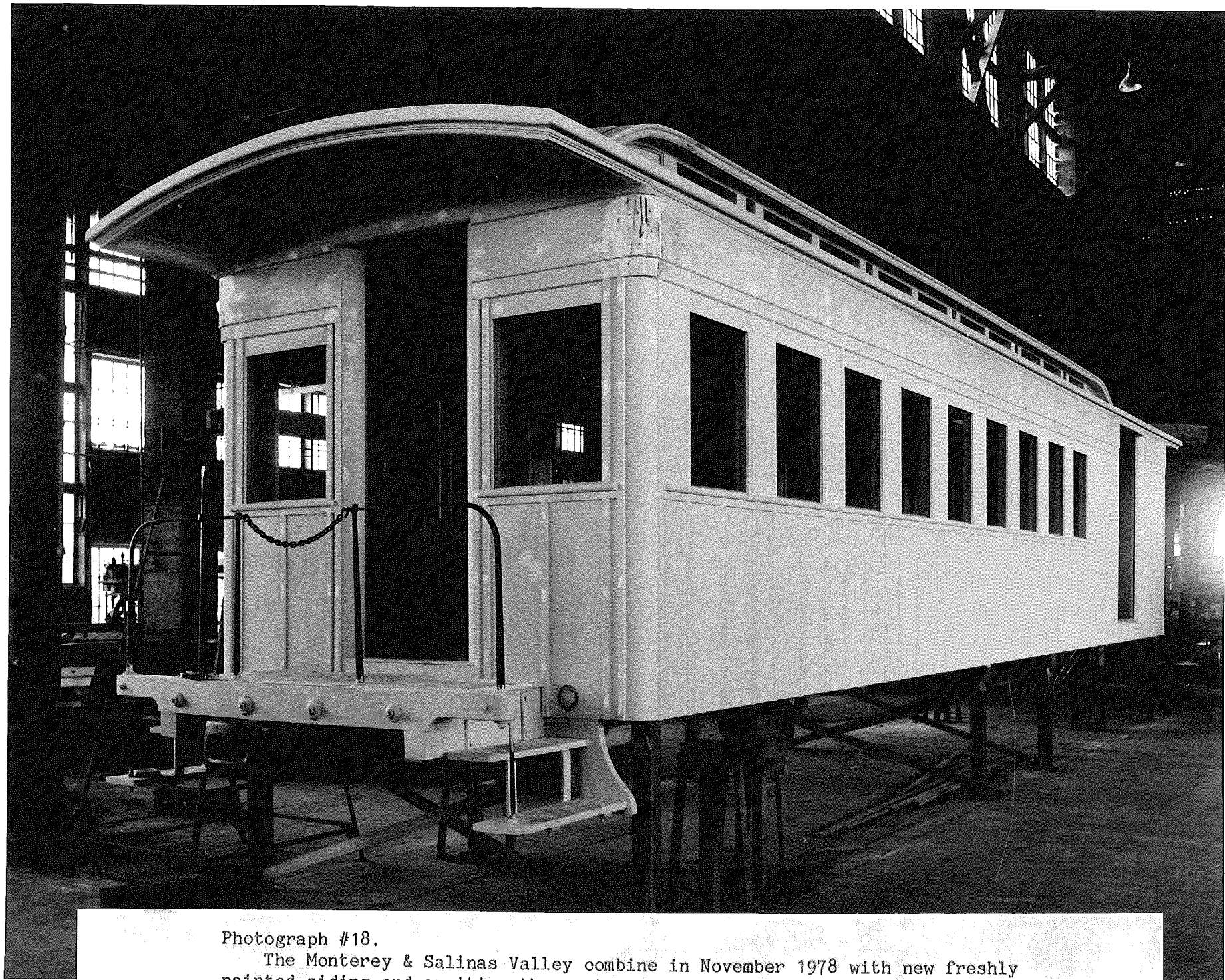
Photograph #16.

Restoration proceeding on the Monterey & Salinas Valley combine.
(CSRM Photo).



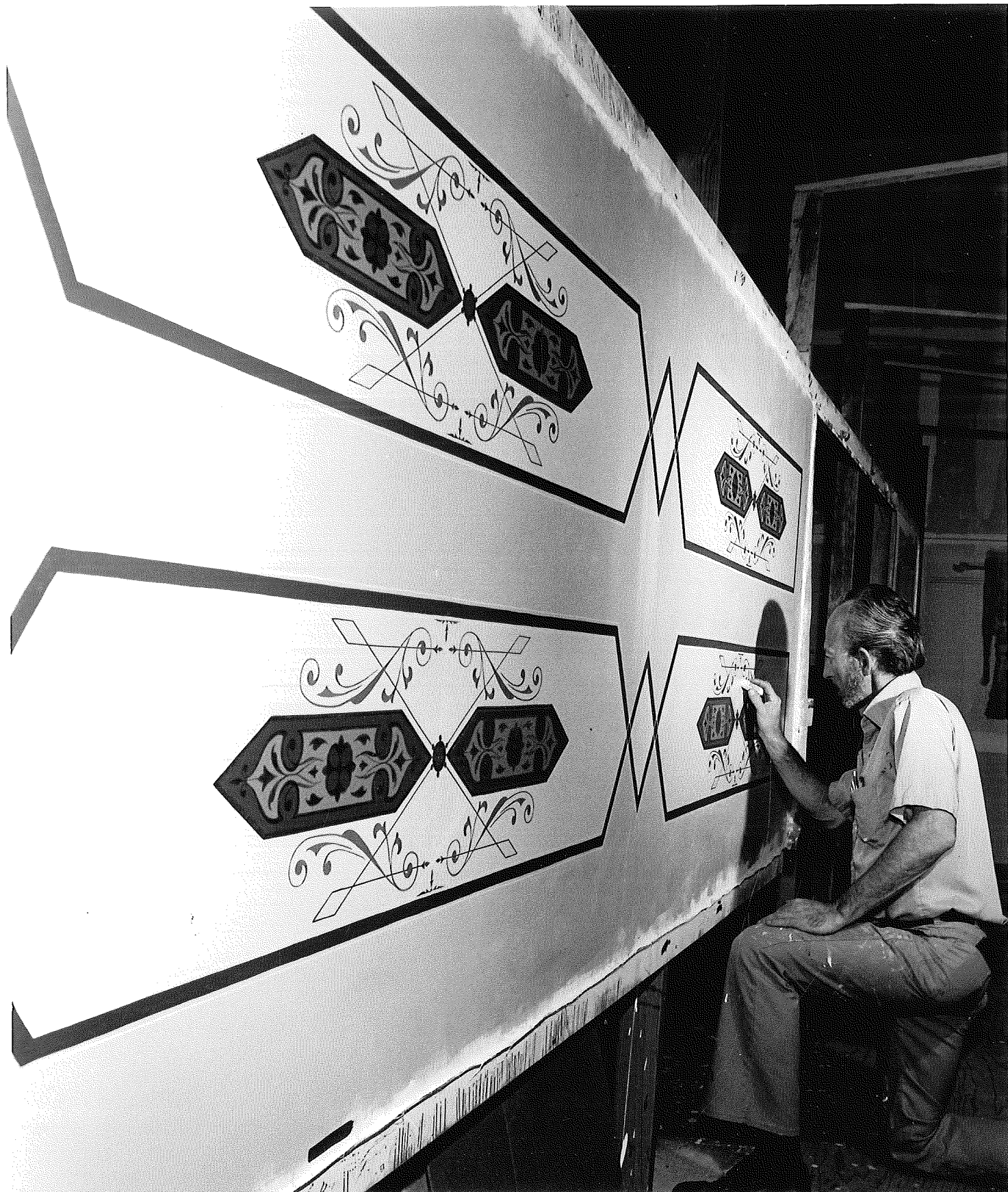
Photograph #17.

An overhead view of the partially restored Monterey & Salinas Valley combine. This view of the Restoration Shop also shows the Virginia and Truckee combine (foreground) and the Nevada Central "Silver State" (far right). (CSRM Photo).



Photograph #18.

The Monterey & Salinas Valley combine in November 1978 with new freshly painted siding and awaiting the restored trucks.



Photograph #19.

Graphic artist Ronald Steiner puts finishing touches on the newly completed ceiling cloth for the Monterey & Salinas Valley combine in November 1978. (CSRM Photo).



Photograph #20.

The restored interior of the Monterey & Salinas Valley combine (looking towards baggage compartment). Car requires only installation of lamp, seat cushions, and backs for completion. (December 1978) (CSRM Photo).



Photograph #21.

The Monterey & Salinas Valley combine, fully restored and being moved from the Restoration Shop to storage in West Sacramento to await the opening of the California State Railroad Museum in the autumn of 1980. (CSRM Photo).

APPENDIX C:
PAINT, LETTERING, AND CEILING CLOTH
RESEARCH AND RESTORATION

The methods of paint research for restoration were developed by a combination of trial and error and searching for methods used in old house restoration and other fields. Staff members used a variety of paint and varnish removers, attempted sand and bead blasting, and finally settled upon the method proposed and developed by Penelope H. Batcheler in 1963 in her article "Paint Color Research and Restoration" published in the Technical Leaflet Series of the American Association for State and Local History.

Two other articles, "Some Notes on Paint Research and Reproduction", in 1975 by Morgan Phillips and Norman Weiss, and "Property Owners Guide to Paint Restoration and Preservation", in 1976, by Frederick Cawley, helped, but it was actual day to day usage that led to the method we currently employ because of its effectiveness.

The paint colors themselves were matched to the Pantone Color system, an ink matching system. Its high portability and moderate cost made it suitable for shop use. Using a light grade of machine oil and 220 grit wet/dry finishing paper, the area to be researched was sanded. In large areas or when working with painted lettering between layers, the suggested method of making a cut with a knife or scalpel was abandoned. The direct sanding has proven to be better and the cross-sectioning and cutting is seldom employed.

As the sanding progresses, 600 grit wet/dry finishing paper is employed with a soft rag used to clean up the residue. Hand magnifiers of 10X power were used in the shop, and a Bausch and Lomb dual-ocular microscope with a higher powered zoom lens and 10X eye pieces was used for the final paint correlation. Paint correlation was done under incandescent light. More specific

information on how paint research was used to pinpoint equipment modification and in developing chronologies can be found in Appendix D: Truck Design and Modification.

Special research techniques were employed in researching the letterboard. After a thorough check of the Monterey & Salinas Valley car, only one piece of the letterboard was determined to be original. Since this piece had been stripped at least twice and had been in a fire, no traces of original lettering could be found by the conventional paint research methods. Following discussions with personnel of the California State University Criminology Laboratory, it was decided to try to analyze the letterboard by ultraviolet light.

This analysis required the exclusion of normal interior shop lighting. After obtaining the ultraviolet lighting equipment, a darkroom was created by draping large sheets of black plastic material over shop scaffolds.

To prepare the letterboard for ultraviolet examination, the letterboard was very carefully scraped with very sharp chisels to remove the paint and expose the bare wood. The normal system of using fine grain wet or dry sandpaper and oil was not usable in this instance for the oil left a whitish residue that would obscure patterns that might be brought out by the ultraviolet light. Over 100 square feet of painted area was scraped in this fashion. Upon exposure to the ultraviolet light, many lines, curves, and shaded areas appeared. This was not unexpected due to the number of times letters had been painted over letters on the board.

To establish a reference point, a search was made for the diagonal lines of an "A". One was located with long-wave ultraviolet. Yet, because of the board's location on the B end, left side, of the car, it could have been the "A" of (Nevada) CENTRAL or (Monterey and Salinas) VALLEY; and, since both words contained subsequent "L's", it became necessary to determine which and how many letters followed.

An extension of the "A's" lines on tracing paper showed the letter to be a block letter without serifs, 7 inches high, about 6-3/4 inches wide, and centrally located on the board; a measurement of its sides averaged 1 inch, lines being drawn 3/4, 1, and 1-1/4 inches apart. The following letter or letters, by these dimensions, had to have spaces of 2 to 3 inches between them; otherwise, they would not fit, nor could they be centrally located on the side of the car. Several vertical and horizontal block lines of two "L's" were apparent; they averaged the same measurements as the "A", and were outlined by what appeared to be grooves left by a pencil or scribing tool as it etched the wood when the initial letter layout was made.

No pictures in the Museum's possession, nor any tracing taken of Nevada Central lettering on separate paint layers, corresponded with the style and position of these letters. Most importantly, however, only the Monterey and Salinas VALLEY has an E in its final spelling -- and this letter was later located, followed by a "Y"; both had the same configurations as the preceding "ALL...". Given these close parameters -- 1 inch block lines of the letters "...ALLEY", between 6 inches and 6-3/4 inches wide, 7 inches high, and 2-1/4 inches apart -- and the lack of any other Nevada Central spelling with a

similar style, it was concluded the etched or residual lines on the wood of the letterboard belong to the word (V)ALLEY of the car's original owners, the Monterey & Salinas Valley Railroad.

The titles, "Monterey & Salinas Valley R.R.", "Monterey and Salinas Valley", and "Monterey & Salinas Valley" all appeared to fit into the 28 feet of the letterboard between the baggage door and the platform end of the car. With no photographic or other evidence of actual lettering, we fell back upon the design that appeared to be most aesthetically pleasing. Tracings of the various names were made and placed upon the letterboard. The "Monterey & Salinas Valley" appeared to best fit the letterboard and was selected as the lettering to go on the car.

Lettering schemes exposed on various layers have been reproduced in Appendix F: Lettering Styles.

The three sections of the headliner or ceiling cloth had been removed from the car sometime before its arrival at the Museum. After research, small fragments of the original cloth, no larger than a few inches in length and barely over a half-inch in width, were found under trim strips in the coach section. These fragments showed limited design elements and original color.

Our staff restoration specialist and artist developed a pattern suggested by the fragments, utilizing the general stylistic treatments in common use during the 1870's. Templates and stencils were made to reproduce the pattern elements (Photographs #19 and #20).

Materials were acquired for the reproduction of the headliners. Single weave brown linen #1, from the Ulster Weaving Company, LTD., New York, was cut to size and stretched on a wooden framework. Three coats of New Temp standard Gesso from Utrecht Linens, Inc., New York, were brushed onto the linen. Backgrounds were laid out and brush painted using Utrecht and Permanent Pigment brands of artist oil colors. All colors were mixed to an exact match of the original headliner samples, or developed from colors popular in the period. When the backgrounds had dried, the detail designs were transferred onto the canvas with the use of the templates. The majority of the detail painting was done by hand, in the manner it would have been done in a headliner shop at Pullman or similar car company. Repeat designs were done using stencils, and the striping was done using a striping tool.

The Monterey & Salinas Valley Combine's original body color was yellow (Pantone 141-142) on a white prime. The baggage door lintel, main and clerestory windows, and most probably, the letterboard, were painted mahogany wood-grain: an orange base with dark varnish overlay.

In November, 1875, the Combine was repainted. The body color remained the same and seems to have been varnished. Again, the baggage door lintel, windows, and the whole letterboard were wood-grained, but this time with a salmon base covered by a darkened varnish. The evidence of trim or striping shown by the ultraviolet light could be applied to this period.

When the Nevada Central purchased the car in 1879, they did not alter these colors but merely stripped the lettering off the letterboard, put on their own, and varnished the existing paint. The first major color change came in

1881 when both the Combine and the newly constructed "Silver State" passenger car were given a coating of bright mustard yellow (Pantone 129-slightly more orange). The windows were left wood-grained. The letterboard was finished with a dark chocolate brown (Pantones 469 and 476, mixed) that approximated the window's appearance; the belt rail and fascia board above became orange.

A later (no date can be determined) coat of light yellow covers both the orange and salmon base on the windows. The entire car was painted this color (Pantone 121) with the letterboard, belt rail, baggage door lintel and windows being trimmed a blue-grey (Pantone Letrafilm Color/Tint Overlay 277A-with white background and slightly more grey) that is somewhat close to the interior blue.

It was determined that some twenty-one exterior colors were present on the main car body, with more colors used on the letterboard since it was repainted more frequently when the car was in use. The information is available in detail in the research workbook entitled "M.&S.V.R. Combine #1, Research on Paint, 1977-78., CSRM", in the Museum Archives.

Information gained from the paint research was used in the final painting of the car so that it appears in the Museum as it did in 1874-75 when operating on the Monterey & Salinas Valley Railroad.

In painting the body color on the Monterey & Salinas Valley Combine No. 1, we experienced a number of technical difficulties, interrupting the schedule for completion of the car. Among these problems was the matter of how to achieve the most accurate historic finish and overall appearance.

At first, the body was primed with white primer, a yellow base coat, and hand sanded. With the second coat of yellow, belt sanding was tried with poor results. Despite four coats of paint, planer marks from milling the lumber remained as obvious distractions from a good finish. Without authority, one restoration painter used a rotary sander to smooth the finish. The rotary sanding left very unpleasant spirals in the painted surfaces, requiring numerous coats of additional paint and a great deal of hand sanding and polishing with steel wool to cover the marks and scratches. Throughout the painting process, three exterior panels which were not sufficiently kiln-dried bled pitch through the paint. A number of 19th century techniques for sealing in the pitch were tried, including the painting of the panels silver, under the finish painting (this failed to stop the leaks); a method of painting the panels with shellac followed by yellow body paint proved the longest lasting. All our efforts were hampered by the everchanging temperatures within the Shop building; as temperature and humidity changed, the wood and paint reacted accordingly with adverse effects. Recently, the pitch has reappeared on the car body. The only solution appears to be to constantly wipe the pitch from the panels with turpentine, or an equivalent, provided this does not mar the display appearance further.

The matter of repainting the Combine to a complete 1874-75 appearance was further hampered by the numerous modifications in the car's design throughout its active railroad life. During the 1875-1885 period, most original outside surfaces were replaced and/or stripped of paint for redecoration. Therefore, little material information remained to inform CSRM of this car's earliest appearance.

Clearly, the typical board and batten construction of most 1870's American railroad coaches favored elaborate striping, serving to highlight each panel, mullion, post, etc. This evidence has been supported by archeological research upon the Virginia & Truckee Combine No. 16 and the Nevada Central Railroad Coach No. 3, "Silver State". (See CSRM restoration reports on these pieces.) Further documentation of paint detail techniques has been found in builders' photographs from eastern and western car manufacturers of the 1865-1880 period. In particular, builders' photos of four narrow gauge cars produced by Jackson & Sharp Car Company from 1873 to 1877 for the Denver & Rio Grande Railway, Martha's Vineyard Railroad, and the Utah & Western Railway exhibit construction and paint features very similar to products of Carter Brothers during the same period. Unable to turn up any builder views of the earliest Carter coaches, decisions on how to most accurately decorate the M.&S.V.R. car were based on the patterns found on the Jackson & Sharp cars mentioned above. Still, the embellishments on the letterboards and posts of the Martha's Vineyard and Utah & Western cars proved too elaborate for the M.&S.V.R. car when compared to its plain interior stencilled trim. In this light, we chose to reuse and modify the interior stencil designs for use on appropriate exterior surfaces, unified by simple striping in colors to complement the wood-graining and body color.

The striping of the 19th century was commonly done by hand, using the most convenient straight edge surface of a car as a guide. Rather than tax the Museum artists' skills and time constraints, we chose to hire a commercial sign painter to letter and stripe the combination car. It seemed that we would spend less time and money by this choice; such was not to be the case. Despite the agreement to hand stripe the panels, the last few were done with

masked edges using tape. As the deadline approached to move the combine into storage, the striping work was not yet half completed and the contract was eventually canceled when the contractor departed without finishing the work. In view of our experience and high bids from other contractors, it was decided that the Unit Shop's artists could complete the work around the movement of the combine to storage. This work was accomplished in approximately 150 total hours with quality comparable to, if not better than, the work done by the contract painter.

The basic exterior colors are yellow with the beveled edges of the battans black. In each panel there is a 3/16 inch wide red stripe creating a rectangle within the panel. Letterboard, windows and end doors are a rich brown. The corner posts have the same 3/16 inch wide red striping with stenciled designs near the top and bottom repeating the design from the interior panels above each window. The car also carries the number one as the number 1 combine of the M.&S.V.R.R.

The interior of the car contains much wood-graining. Both the wood window blinds and the upper seat frames are in their natural wood finish covered only by several layers of clear varnish.

The panels between and over the windows plus the flat walled area of the clerestory are all painted a soft grey with slight bluish tint. The panels over the windows and in the clerestory have rectangles created by a darker blue grey 3/16 inch line with the ends of a stencil design which merges from the blue grey of the line to a touch of red matching the red in the ceiling cloth striping.

The end door stiles and rails are dark brown and heavily wood-grained with lighter simulated oak wood-grained panels. This motif is repeated on the interior car ends and the walls of the saloon. The upper and lower wainscot-rails, truss planks, cornices, and other longitudinal members are also deep brown and wood-grained.

The final color choices for the restored combination car were based on the availability of physical evidence from the 1874-75 period, and the desire to present the car as it was built by the Carter Brothers in their first attempt at passenger car manufacture.

The car as it stands today, is the representative of a period of car construction that was both functional and artistic.

APPENDIX D:
TRUCK DESIGN AND MODIFICATION

The four foot wheelbase passenger car trucks found under the Monterey & Salinas Valley Railroad Combination Car No. 1 differ from the more standard Carter Brothers designs of which we have examples. The trucks themselves were ongoing modification which was quite common for passenger equipment on poorer railroads and, more noticably, they are smaller and have features that indicate they once were quite different from the way they appeared when they arrived at the Restoration Shop in 1977.

Photograph #1 shows the trucks after they had been removed from under the car. They feature seven Carter Brothers standard design cast pedestals bearing casting dates of 1897. On the right outside wheel of the front or baggage end truck, there was an 1875 Kimball cast pedestal. Both style pedestals did not fit well in the notches cut for them in the wheel piece, with the Kimball the poorest fit. (See Photograph #2.) All pedestals had a small piece of wood nailed to the underside of the beam for bracing. There were wooden fillers inserted in notches cut across the top of the transoms which showed a change from overhanging to underhung suspension, and there were several seemingly unnecessary bolt holes that had been plugged with bolts having only a cosmetic function. The research into paint layering on the wheel piece plate showed a trim stripe running along the lower edge under the cast pedestals, indicating that a pedestal of some other design was used at one time.

The Carter Brothers car building operation from early in 1870 was limited to the construction of freight equipment until they built the two combination cars for the Monterey & Salinas Valley Railroad in 1874. Physical evidence would bear out that this was indeed, structurally, a first attempt at

passenger car building, since it is more like a house on wheels than a typically sound railroad car of the period. With no prior need to design passenger car trucks of their own, it would be reasonable to assume that the Carter Brothers used readily available equipment of a type commonly in use during the period. It is possible they could have simply modified freight car trucks and used them, but at this point that is speculation and cannot be substantiated.

An early style pedestal that approximated the letter "U", going under the journal box, rather than over it, is used in the first narrow gauge coach, the "Denver", constructed by Jackson & Sharp, Wilmington, Delaware, for the Denver and Rio Grande Railroad in 1871. The "Denver" and another narrow gauge coach with this style pedestal design, the "Eureka", built for the Eureka & Palisade Railroad in the same period by Billmeyer & Smalls, York, Pennsylvania, are both illustrated in Fleming's book, Narrow Gauge Railways in America. An advertisement mentions a "patented truck with 24 inch wheels and 3-3/8 inch axles". A patent search from 1960 to 1885 resulted in discovering the original patent for an improvement of these pedestals: patent #157,569 CAR AXLE-BOX SUPPORTS, filed November 4, 1874, by Charles Billmeyer and patented on December 8, 1874. The invention was solely for trucks intended for narrow gauge use, and was designed to prevent the center of gravity from passing outside the rails when the car was on a tilt, thus preventing the car from overturning, which appeared to be a common problem with the earlier version of this type of truck assembly. The axle-box, that is on the rear set of trucks, when in motion has a tendency to pivot out and to be pulled further out of place on a curve. The use of a close fitting yoke over the journal box, resembling an inverted "U", running behind the pedestal, and attached by two pins to the equalizing bar, prevented this problem.

Photograph #3 shows Magma Arizona Railroad Combine No. 201 with this style pedestal. The car was originally built for the Eureka & Palisade Railroad by Billmeyer & Smalls. Photograph #4 is Eureka & Palisade (Eureka Nevada) Baggage Car No. 10 in 1938, still having the "U"-shaped pedestals. Photograph #5 shows the trucks in detail from this car. Compare this with Photograph #6 which shows the trucks from the Monterey & Salinas Valley Combine No. 1, and the change in design becomes more apparent.

By the late 1870's, the transition was being made to the more standard cast pedestal design which offered greater flexibility and which, by utilizing an equalizing bar that curved up and over the top of the journal box, instead of going underneath it, used gravity to improve the trucks' stability. The truck was more flexible because it gave improved lateral play without sacrificing structural integrity.

To understand the importance of this information, and the fact that the car was built in the early 1870's, contrast these four foot wheelbase trucks with the 1881 Carter five foot wheelbase passenger car truck illustrated in MacGregor's book, Narrow Gauge Portrait. Figure #1 shows these trucks and Photograph #7 shows the actual trucks removed from the coach "Silver State" in 1978. This Nevada Central coach has similar trucks to those in the illustration and the pedestals bear casting dates of 1880. These illustrations indicate that at least by the 1880's the Carter Brothers were utilizing their own distinctive truck design, although a patent search under both Thomas and Martin Carter failed to reveal a patent in either name.

Also evident is the modification in the transom from the old style swing-hangers in the overhanging suspension system, which required a slightly narrower spring plank, to a sturdier system using a "U"-bolt going directly through the transom and allowing the use of a larger spring plank. The original single coil springs were replaced with double-coil nest-springs at the same time. Photograph #8 shows the wooden filler removed from one of the combination car's transoms. Photograph #9 and Photograph #10 show details of the restored trucks showing how the suspension system appeared in the 1870's.

The paint on the trucks was mentioned previously, and the research gave us the first substantiation to the theory that another type of pedestal was used. Coordinating this physical research with documentation was made easier with the discovery of the pre-1886 photograph of the combination car on the Nevada Central, showing the "U"-shaped pedestals. (See Appendix B, Photograph #2.) There is another photograph, probably taken after 1901, that shows the trucks after they were modified and had the more standard design Carter Brothers cast pedestals in place (see Appendix B, Photograph #4). This photograph also shows the car with the major structural modifications completed, including the enlarged baggage section which necessitated the removal of two windows on each side.

The areas where paint was sampled included the wheel piece plate, wheel piece, double-coil nest-springs, equalizing bar spring seats and caps, equalizing bars, elliptic springs, transoms, brake beams, end pieces, journal boxes, journal box covers, and pedestals. Figure #2 represents the paint chronology coordinated from all the areas sampled.

For the sake of simplicity, the comparison will be limited here to the wheel piece plates, which indicate the positioning of the "U"-shaped pedestals and the cast pedestals, and the pedestals themselves, since the former represents what can be regarded as "original", and the latter as "modification". In Photograph #11 we see an example of paint layering on the wheel piece plate exposed by a method developed by Penelope Batcheler in her 1963 article in the Technical Series of the American Association for State and Local History, later refined by the Association for Preservation Technology in 1975, the Preservation League of New York State in 1976, and the California State Railroad Museum continually since 1977. The paint colors were then matched to the Pantone Color System, which is both less expensive and more readily adapted to the shop environment than Munsell.

The wheel piece plate has seventeen (17) distinct layers of paint with striping of another color found on four (4) of these layers. The pedestals (except for the Kimball, which had eight (8) layers) have ten (10) distinct layers of paint. Both pieces coordinate exactly and show that the trucks were painted yellow with black striping after the modification in 1901, as yellow is the base coat of all but one of the pieces added at this time, including the wooden fillers placed in the transoms during the suspension change. The double-coil nest-springs show the identical layering except they have a base layer of black instead of yellow.

Considering that we have an early photograph that is believed to date before 1886 showing one of the combination cars with "U"-shaped pedestals (Appendix D, Photograph #2), we are faced with what appears to be a conflict based on the paint record. From the yellow layer with the black trim

striping, the eighth (8th) layer applied, which denotes the rebuild of the trucks, through the remaining nine (9) layers to the most recent paint generation, there is reasonable correlation between the known body colors and the truck colors. On the seven (7) layers below the yellow on the wheel piece there is little correlation and the colors often clash. The truck assemblies of early railroad equipment were often the same color as the body or painted a color that was used in trim.

The lack of continuity in the oldest layers were compared to the twenty-one (21) generations of body paint leads to the conclusion that these were not the original trucks that came with the car. This conclusion may be the result of our inability to understand paint combinations used during the period. The original trucks, or at least those depicted in the photograph taken in the mid-1880's, did have the "U"-shaped pedestals, but whether or not these are the same trucks that were under the car in 1874 is unknown.

The already mentioned article in the Central Nevadan of 1887 that describes combination car No. 2 being "remodeled throughout from truck to roof, ...and with its new upholstering, floor, trucks, ceiling, and coat of paint..." makes it reasonable to assume that much the same may have happened in 1886 during the rebuild of combination car No. 1. This makes an interesting case for the car having come with the modified freight car trucks.

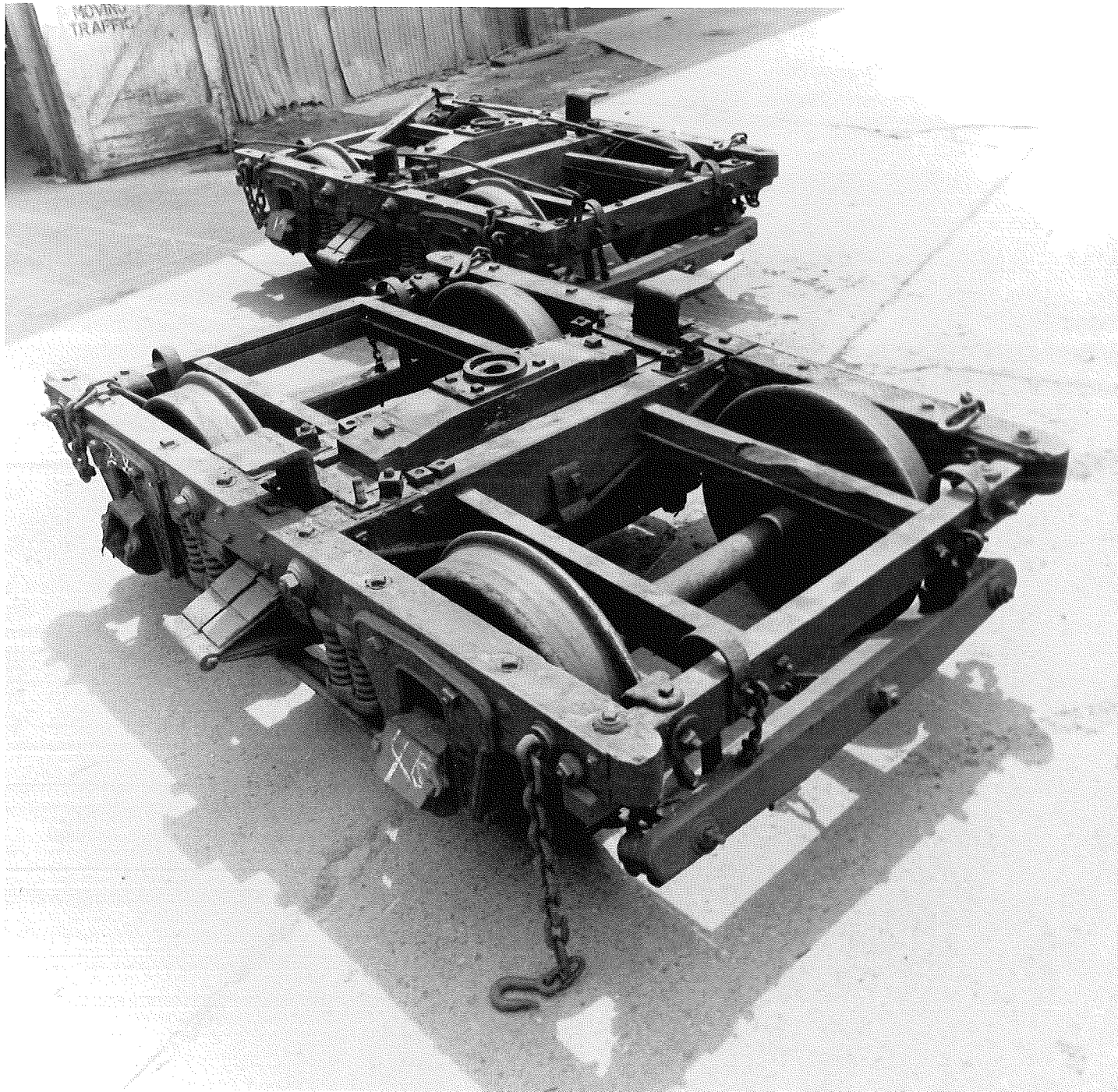
The trucks shown in the early photograph could have come from the Eureka & Palisade Railroad, the narrow gauge just a short distance to the east, and there appears to have been some equipment exchanges and there were incidents

of the E & P doing machine work for the Nevada Central in the 1880's. The Eureka & Palisade, as already mentioned, had equipment that had been built by Billmeyer and Smalls, and their use of the "U"-shaped pedestal has been noted.

The decision was made to restore the trucks to their earliest photographically documented appearance in keeping with the research done on the rest of the car.

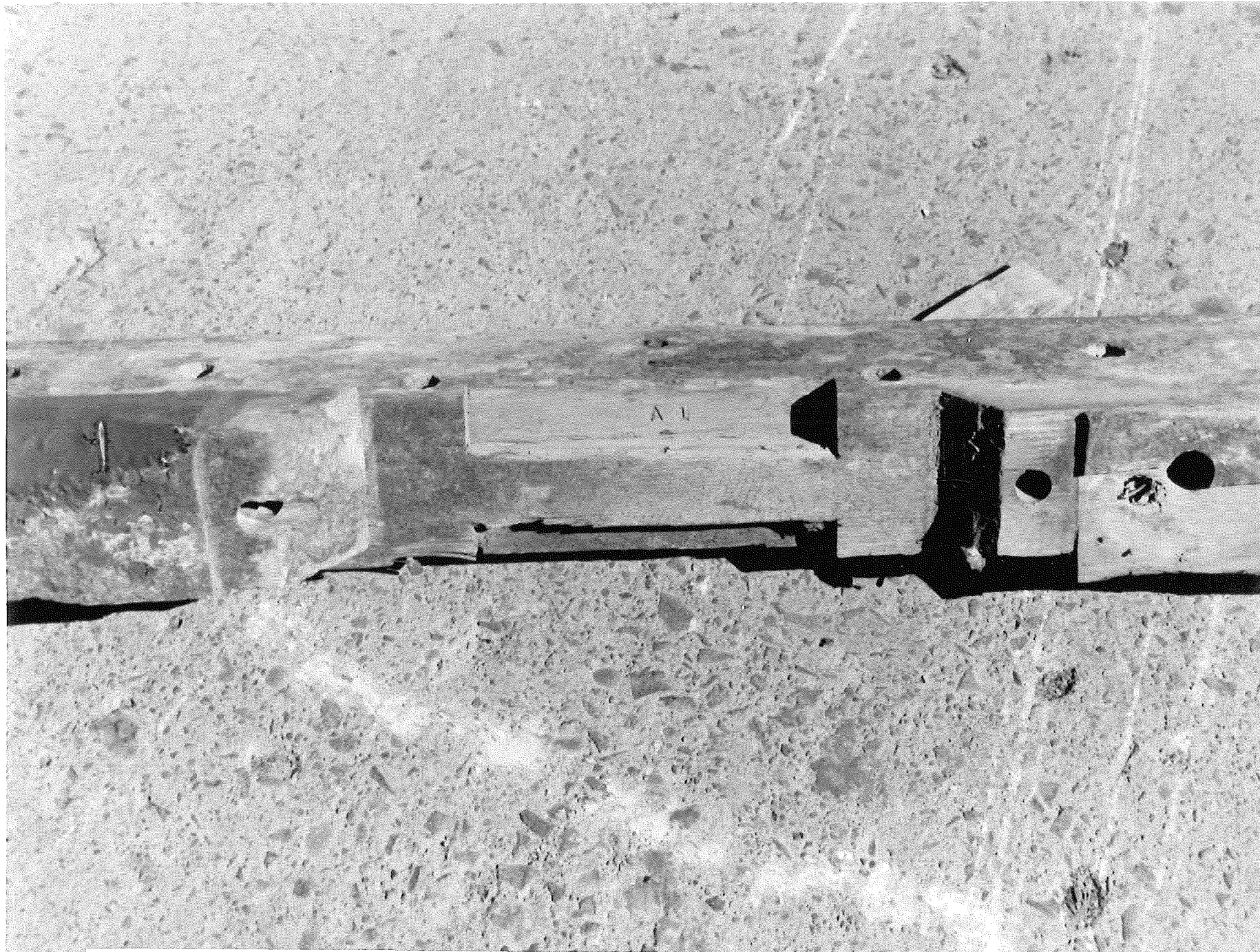
ILLUSTRATIONS

Photograph #1	CSRM Photograph, 1977
Photograph #2	CSRM Photograph, 1977
Photograph #3	Magma Copper Company, Courtesy of Gordon Chappell
Photograph #4	Al Phelps Collection
Photograph #5	Al Phelps Collection
Photograph #6 through Photograph #21	CSRM Photographs, 1977-1979
Figure #1	Bruce MacGregor, <u>Narrow</u> <u>Gauge Portrait</u>
Figure #2	CSRM Staff, 1978



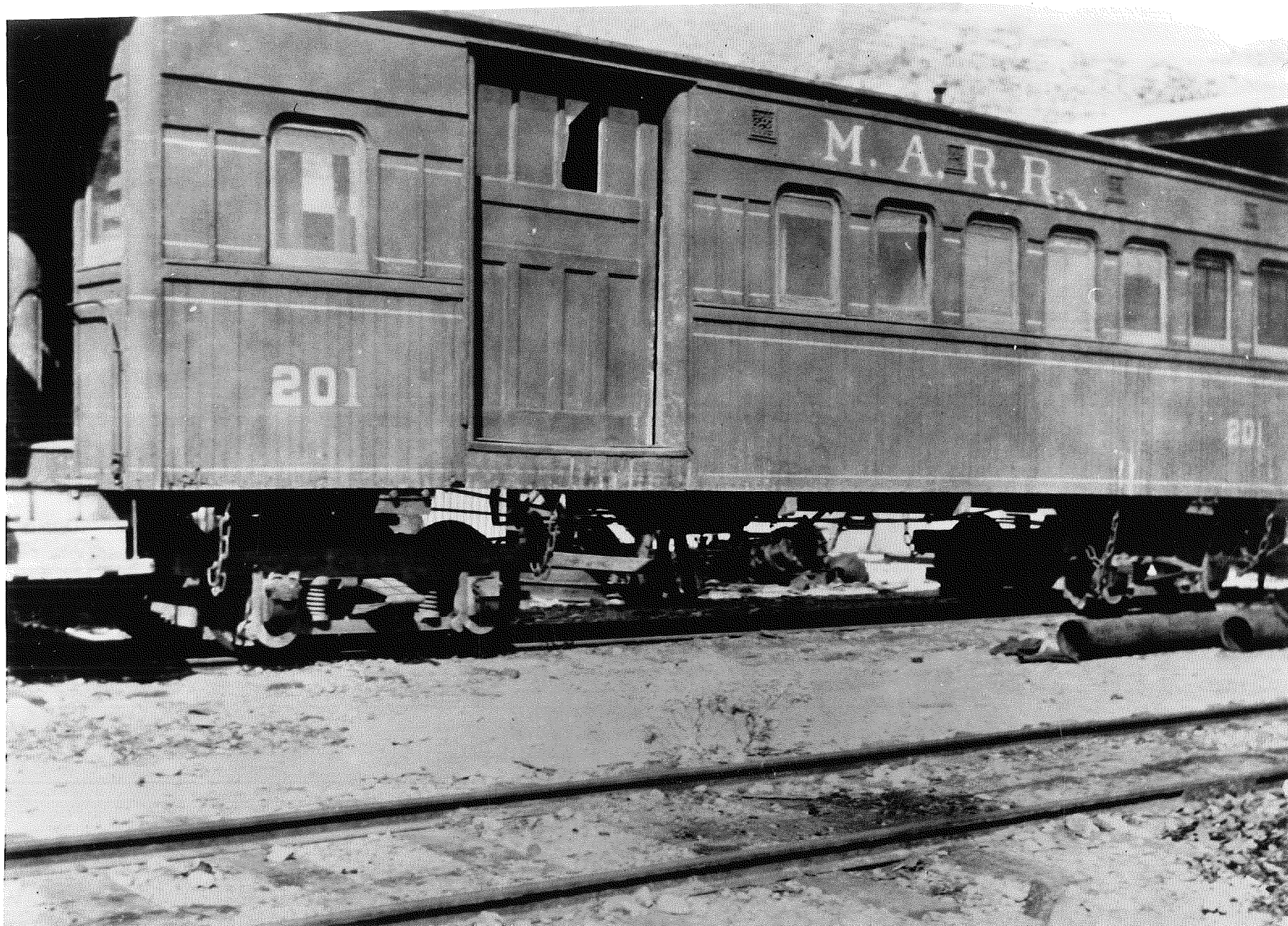
Photograph #1, Appendix D.

Trucks after being removed from the Monterey & Salinas Valley combine in 1977. (CSRM Photo).



Photograph #2, Appendix D.

Wheel piece with notches after removal from Monterey & Salinas Valley trucks. Note added piece at right side of photo. (CSRM Photo).



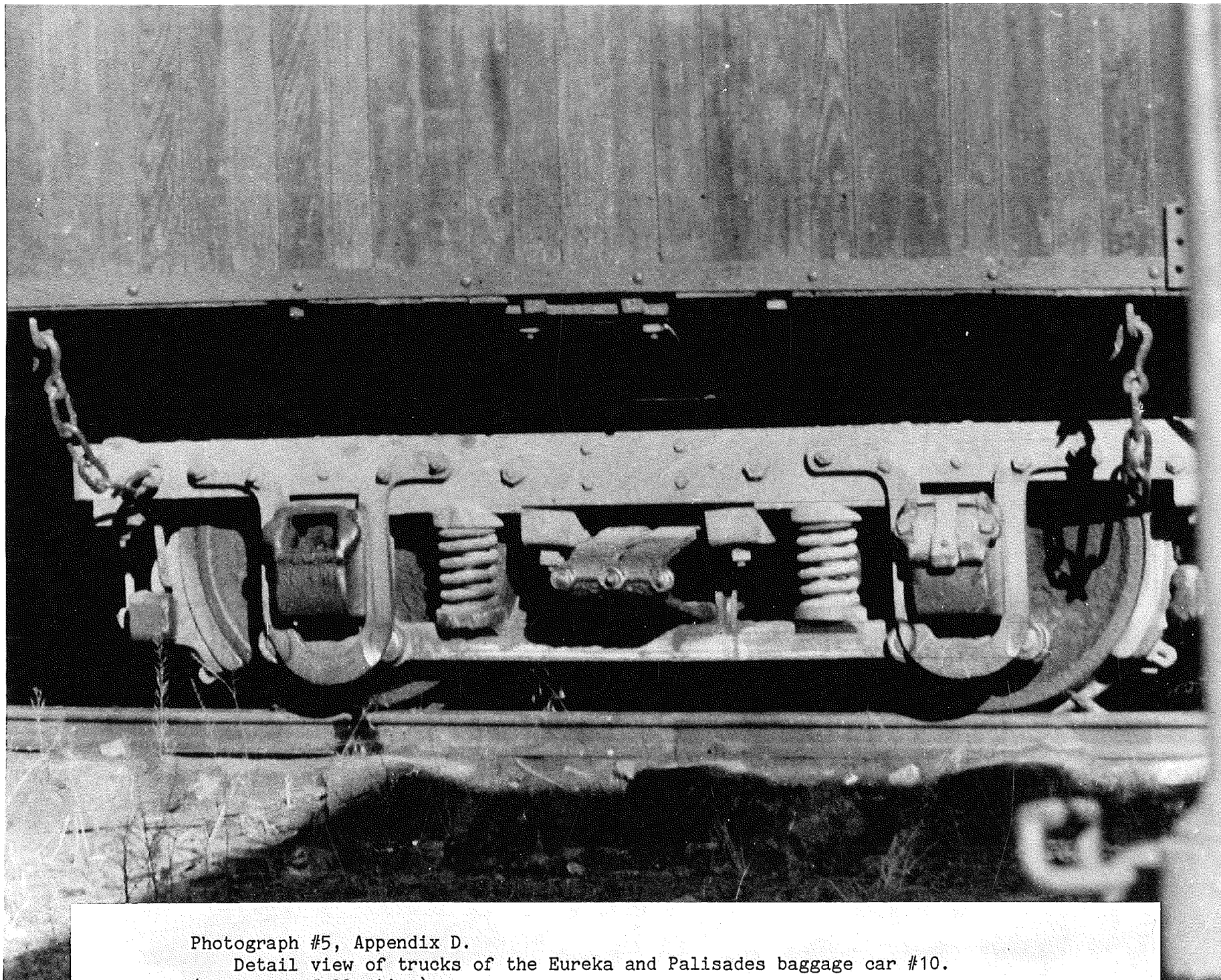
Photograph #3, Appendix D.

Magma Arizona Railroad combine #201 with "U"-shaped pedestal. (Originally built for Eureka and Palisade Railroad by Billmeyer and Smalls.) (Magma Copper Company).



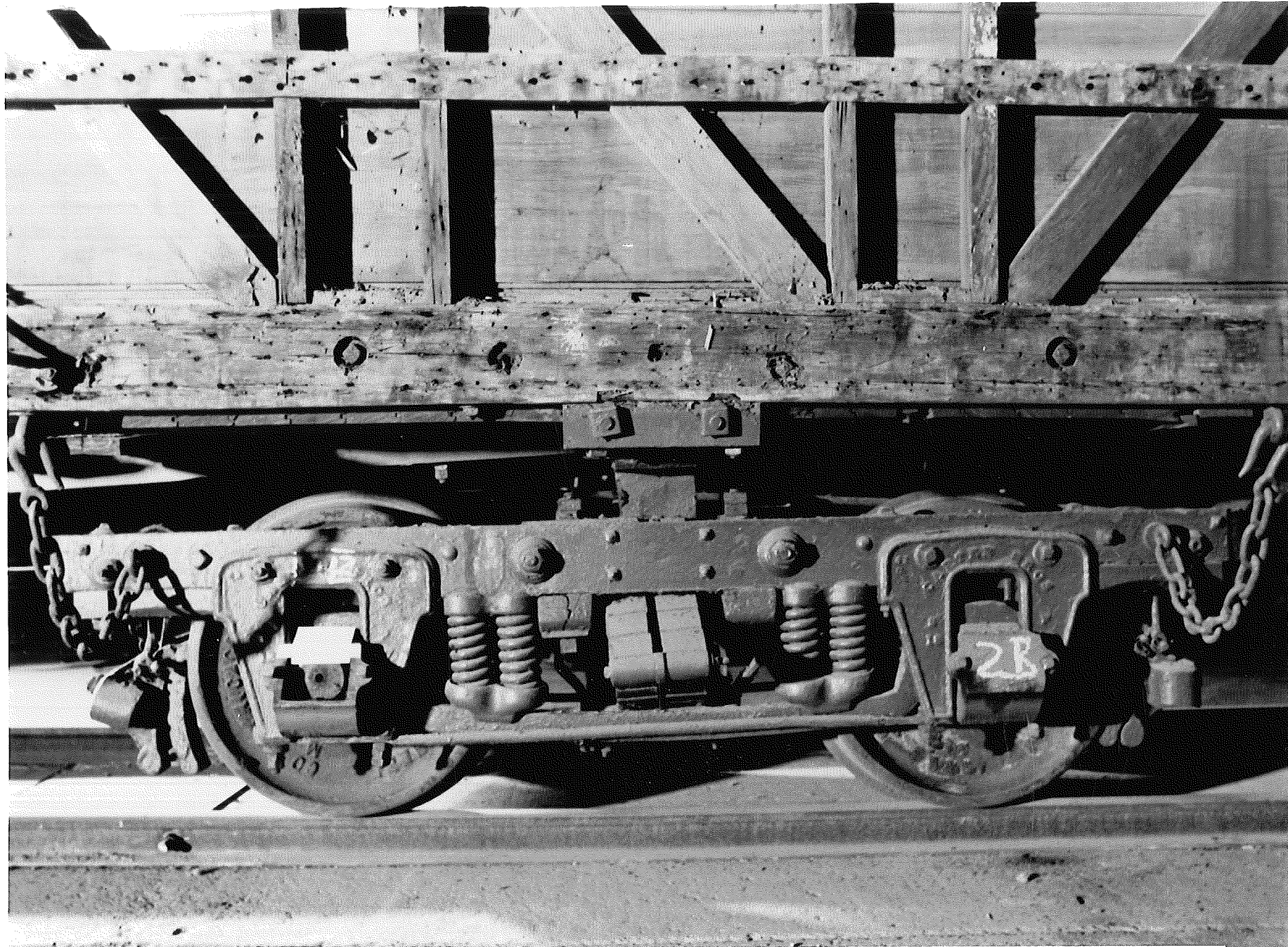
Photograph #4, Appendix D.

The Eureka and Palisade Baggage car #10 in 1938. "U"-shaped truck pedestals are still in use. (Al Phelps Collection).



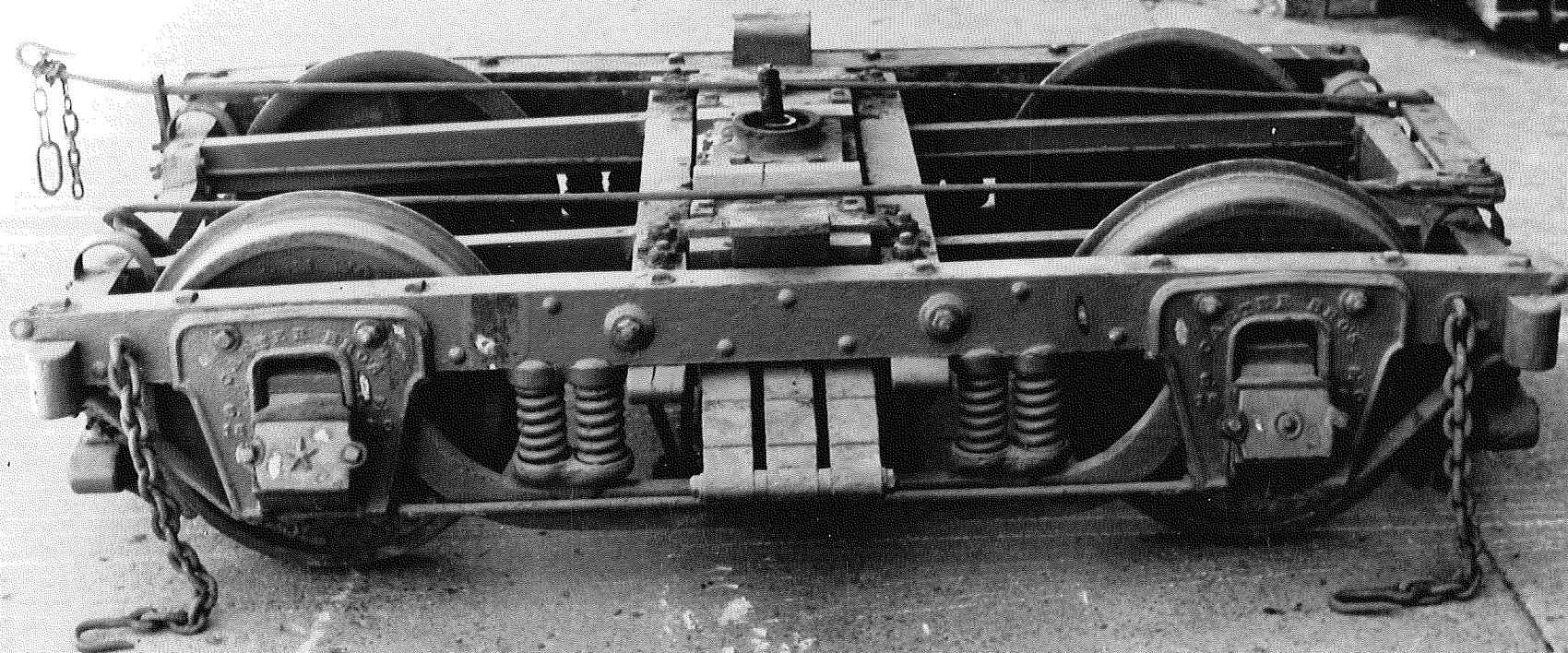
Photograph #5, Appendix D.

Detail view of trucks of the Eureka and Palisades baggage car #10.
(Al Phelps Collection).



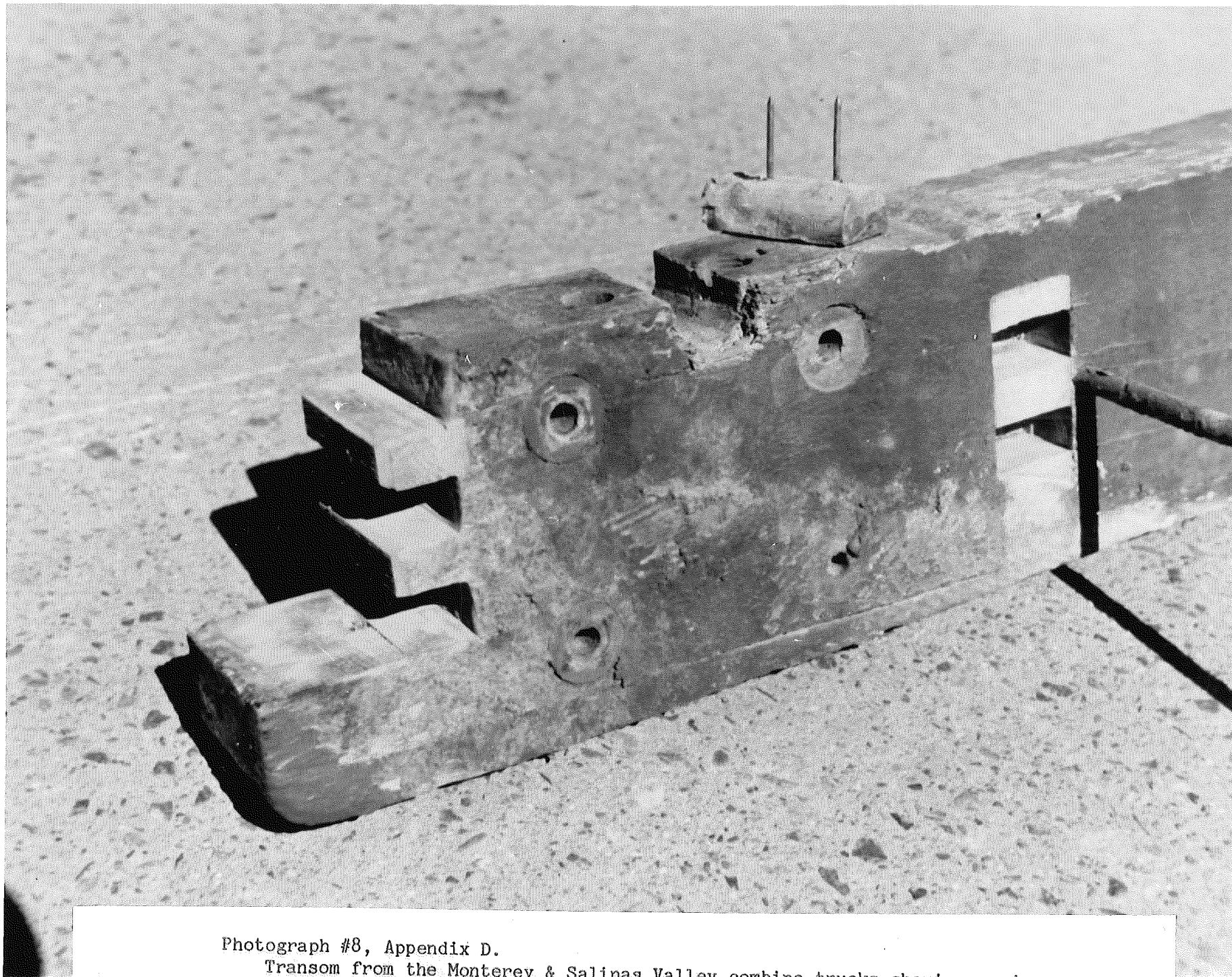
Photograph #6, Appendix D.

Trucks of the Monterey & Salinas Valley combine before being removed from the car. Compare with Photo #5, Appendix D for changes in truck design. (CSRM Photo).



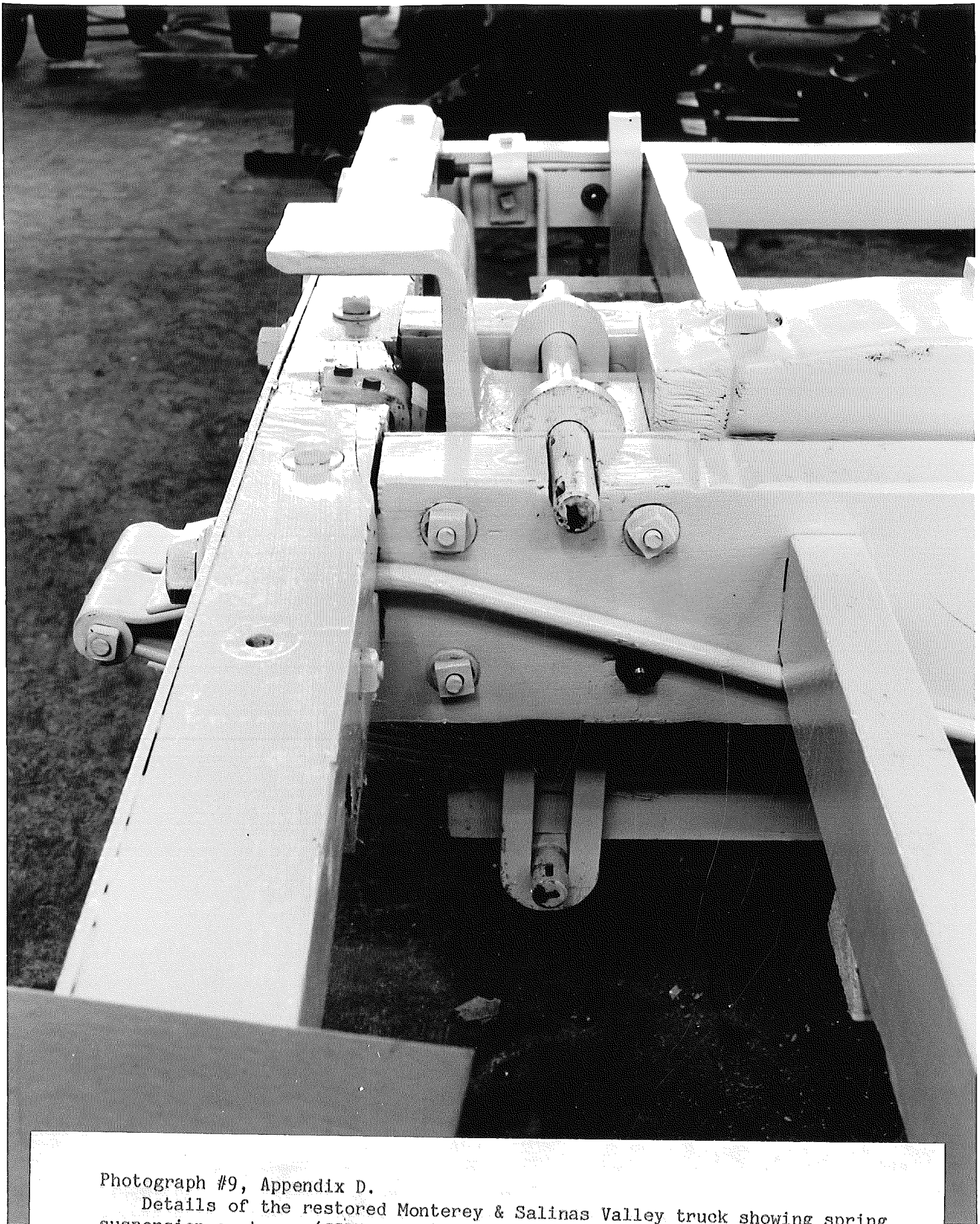
Photograph #7, Appendix D.

Trucks of the Nevada Central coach "Silver State". Pedestals bear casting date of 1880. Note that paint sampling has been begun on this truck. (CSRM Photo).

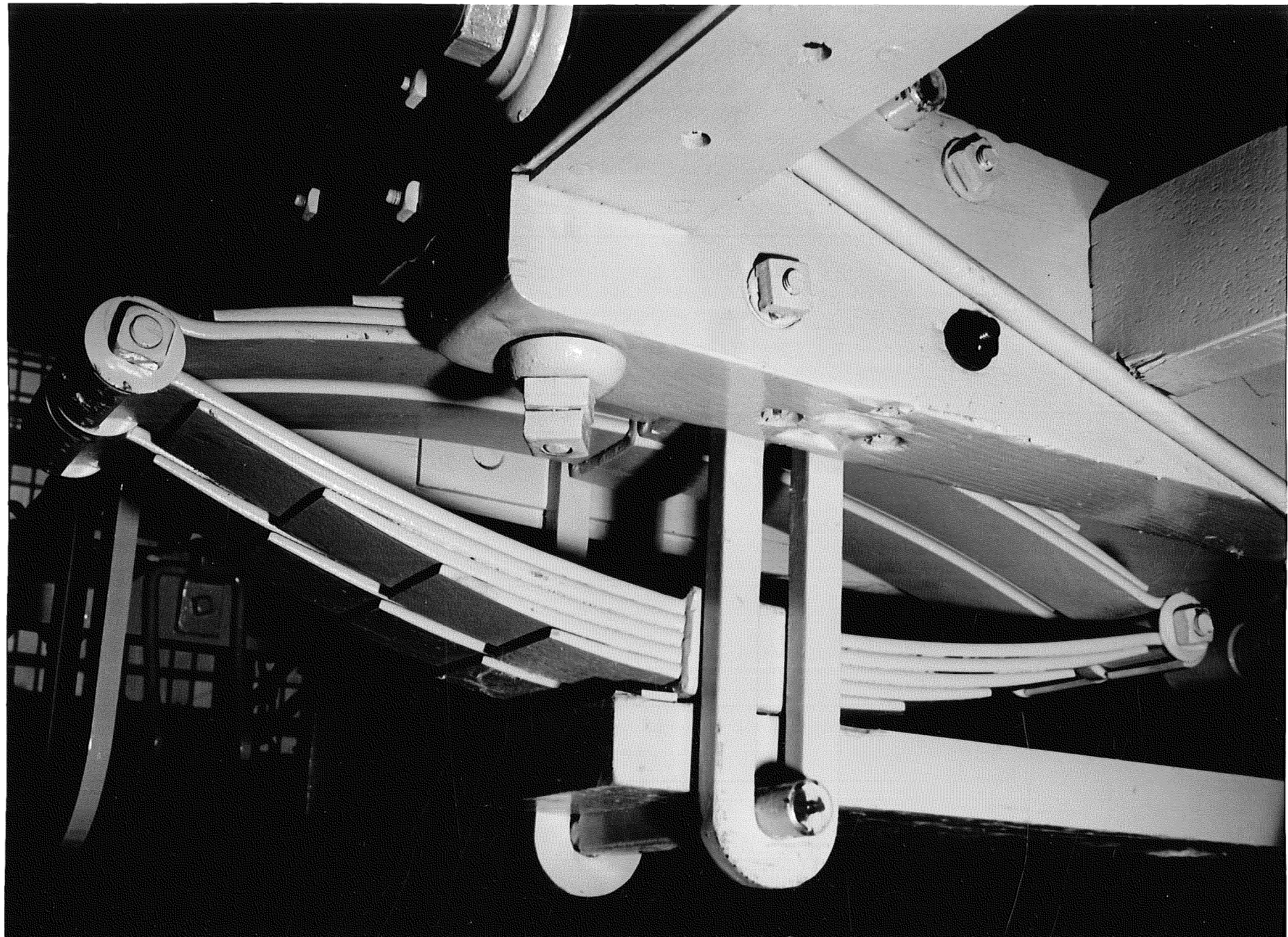


Photograph #8, Appendix D.

Transom from the Monterey & Salinas Valley combine trucks showing wood filler piece removed. (CSRM Photo).

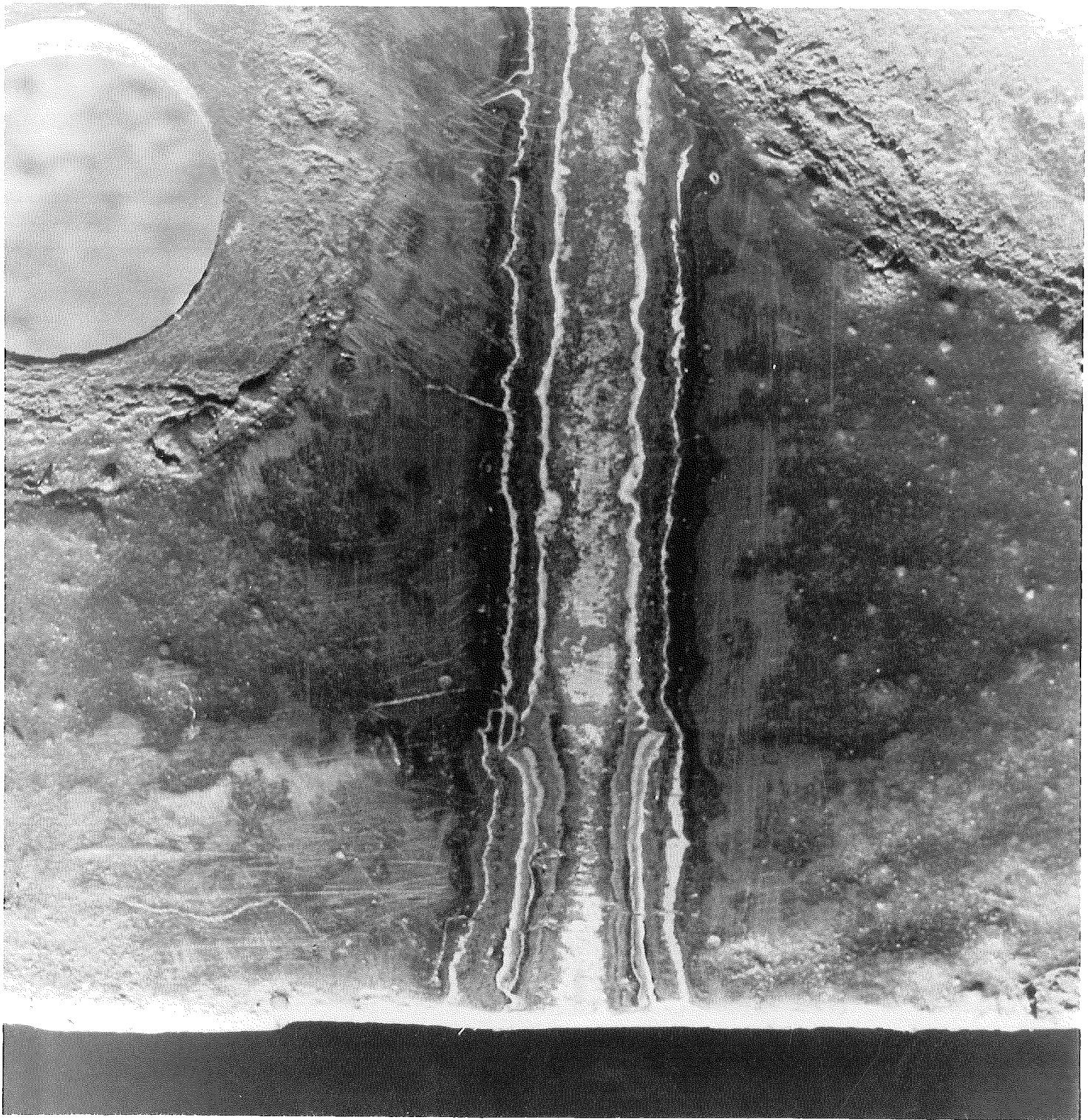


Photograph #9, Appendix D.
Details of the restored Monterey & Salinas Valley truck showing spring
suspension system. (CSRM Photo).



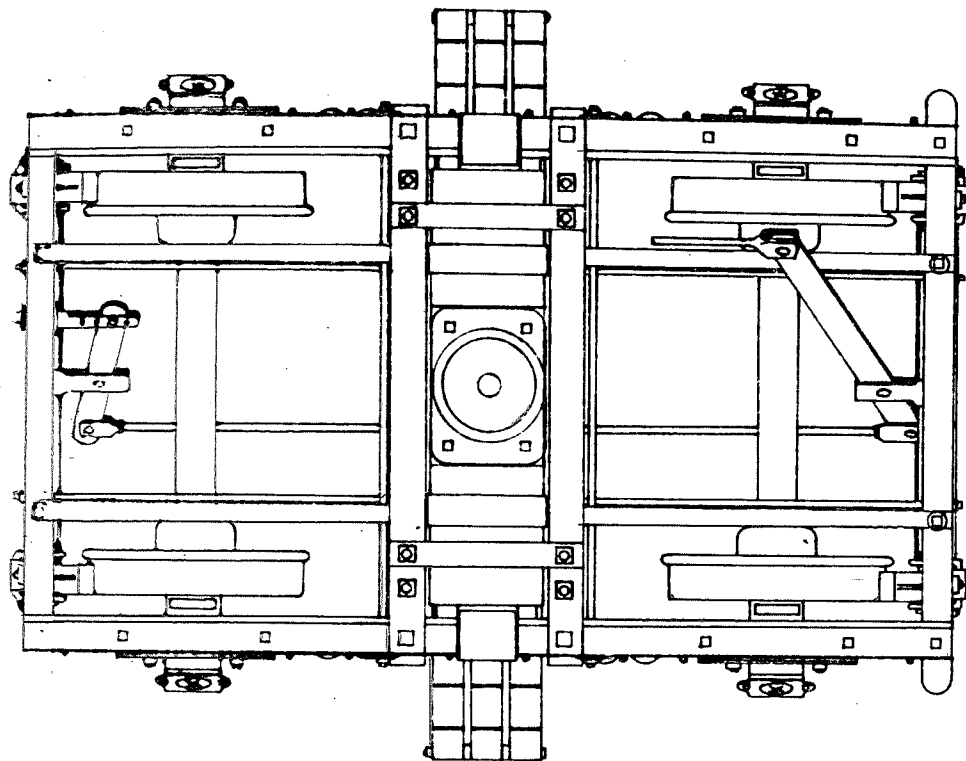
Photograph #10, Appendix D.

Details of the restored Monterey & Salinas Valley truck showing spring suspension system (from bottom of truck). (CSRM Photo).



Photograph #11, Appendix D.

Paint layering on the wheel piece of the Monterey & Salinas Valley trucks exposed in performing paint research. (CSRM Photo).



CARTER BROS.

PASSENGER CAR TRUCK - 1881

Davenport, Calif. May, 1970

Gauge: 3' 0"
 Wheelbase: 4' 11"
 Wheels: 22" double-plate
 Over end sills: 7' 10 1/4"
 Over side sills: 4' 5 1/4"
 Height to center-plate: 2' 3/4"
 [David Soderblom]



GRAPHIC SCALE

Scale 1/2" = 1'

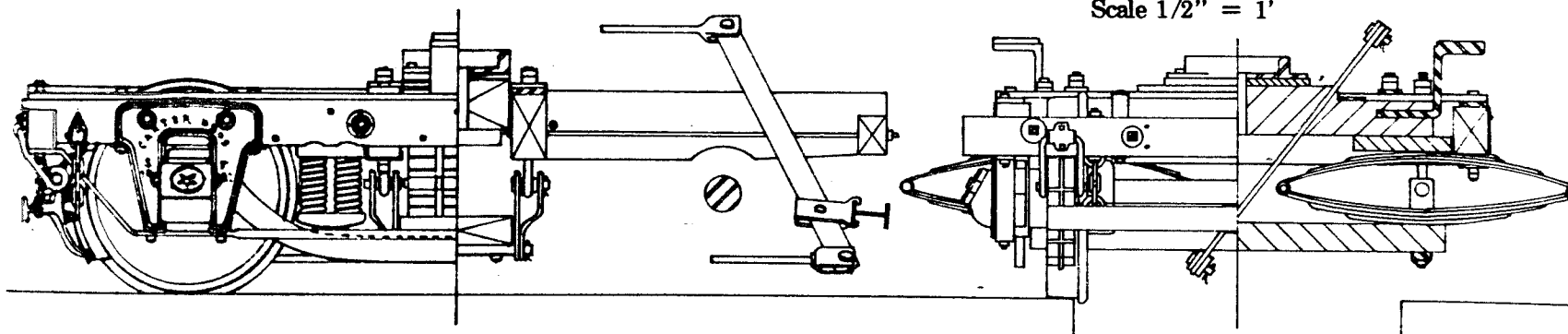


FIGURE NO.1

FIGURE #2 -- PAINT CHRONOLOGY

<u>Wheel Piece Plate</u>		<u>Transom</u>	<u>End Piece</u>	<u>Brake Beam</u>	<u>Coil Springs</u>	<u>Spring Caps</u>	<u>Seats</u>
oldest		oldest	oldest	oldest	oldest	oldest	oldest
1--Red	PANTONE 181	1--Red					
2--Ochre	PANTONE 154 +	2--Ochre					
3--Brown	PANTONE 469	3--Brown					
4--Brown	PANTONE 161	4--Brown					
5--Orange	PANTONE 145 *	5--Orange					
6--Pink	PANTONE 500 *	6--Pink					
7--Yellow	PANTONE 140	7--Yellow					
8--Yellow	PANTONE 128 *	8--Yellow					
9--Brown	PANTONE 497	9--Brown			1--Black	1--Yellow	
10--Red	PANTONE 181	10--Red			2--Brown	2--Brown	1--Brown
11--Black	PANTONE BLACK	11--Black			3--Red	3--Red	2--Red
12--Brown	PANTONE 462	12--Brown			4--Black	4--Black	3--Black
13--Grey	PANTONE 431	13--Grey	1--Grey	1--Brown	5--Brown	5--Brown	4--Brown
14--Brown	PANTONE 462	14--Brown	2--Brown	2--Grey	6--Grey	6--Grey	5--Grey
15--Black	PANTONE MATTE	15--Black	3--Black	3--Brown	7--Brown	7--Brown	6--Brown
16--Black	PANTONE GLOSSY	16--Black	4--Black	4--Black	8--Black	8--Black	7--Black
17--Red	PANTONE 181	17--Red	5--Red	5--Black	9--Black	9--Black	8--Black
most recent		most recent	most recent	6--Red	10--Red	10--Red	9--Red
				most recent	most recent	most recent	most recent

+ This layer has trim striping of PANTONE WARM RED

* This layer has trim striping of PANTONE BLACK

I-7365C

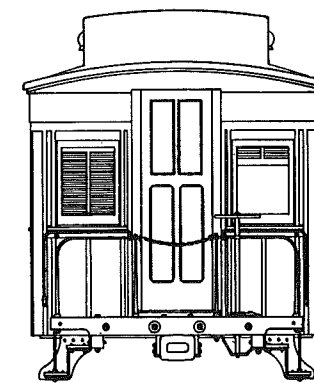
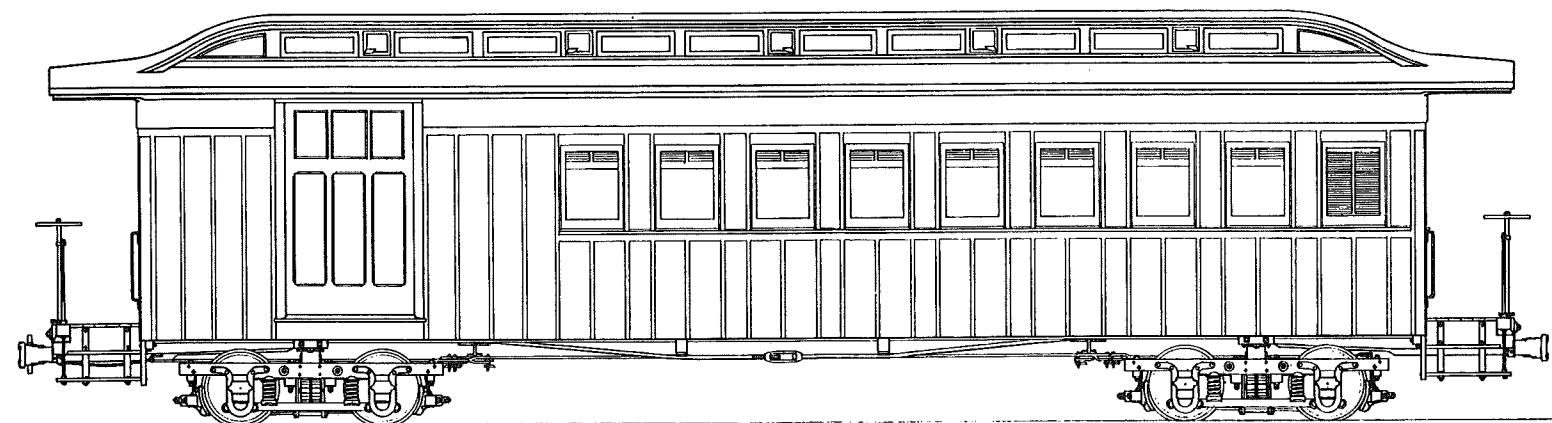
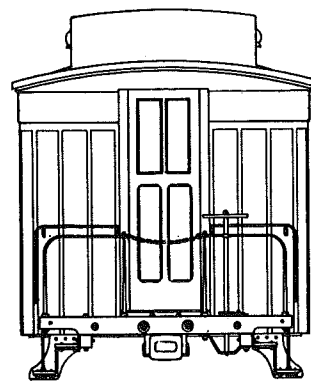
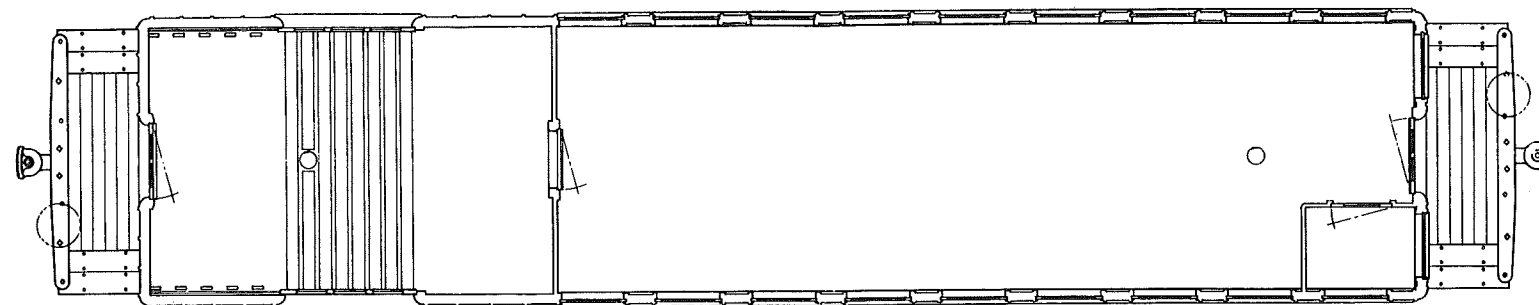
FIGURE #2 -- PAINT CHRONOLOGY
(continued)

<u>Wheel Piece</u> <u>Plate</u>		<u>Equalizing</u> <u>Bar</u>	<u>Elliptic</u> <u>Springs</u>	<u>Journal</u> <u>Boxes</u>	<u>Journal Box</u> <u>Covers</u>	<u>Carter</u> <u>Pedestal</u>	<u>Kimball</u> <u>Pedestal</u>
oldest		oldest	oldest	oldest	oldest	oldest	oldest
1--Red	PANTONE 181						
2--Ochre	PANTONE 154 +						
3--Brown	PANTONE 469						
4--Brown	PANTONE 161						
5--Orange	PANTONE 145 *						
6--Pink	PANTONE 500 *						
7--Yellow	PANTONE 140			1--Black			
8--Yellow	PANTONE 128 *			2--Yellow		1--Yellow	
9--Brown	PANTONE 497			3--Brown		2--Brown	
10--Red	PANTONE 181	1--Red		4--Red		3--Red	1--Red
11--Black	PANTONE BLACK	2--Black		5--Black		4--Black	2--Black
12--Brown	PANTONE 462	3--Brown	1--Brown	6--Brown	1--Black	5--Brown	3--Brown
13--Grey	PANTONE 431	4--Grey	2--Grey	7--Grey	2--Grey	6--Grey	4--Grey
14--Brown	PANTONE 462	5--Brown	3--Brown	8--Black	3--Brown	7--Brown	5--Brown
15--Black	PANTONE MATTE	6--Black	4--Black	9--Black	4--Black	8--Black	6--Black
16--Black	PANTONE GLOSSY	7--Black	5--Black	10--Black	5--Black	9--Black	7--Black
17--Red	PANTONE 181	8--Red	6--Red	11--Red	6--Red	10--Red	8--Red
most recent		most recent	most recent	most recent	most recent	most recent	most recent

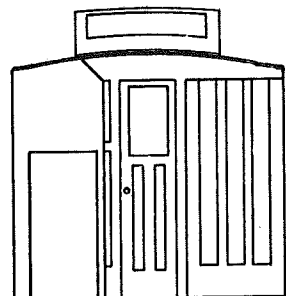
+ This layer has trim striping of PANTONE WARM RED

* This layer has trim striping of PANTONE BLACK

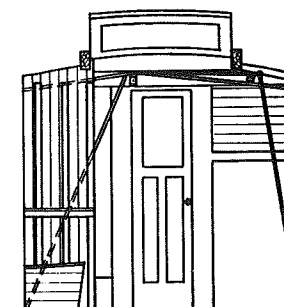
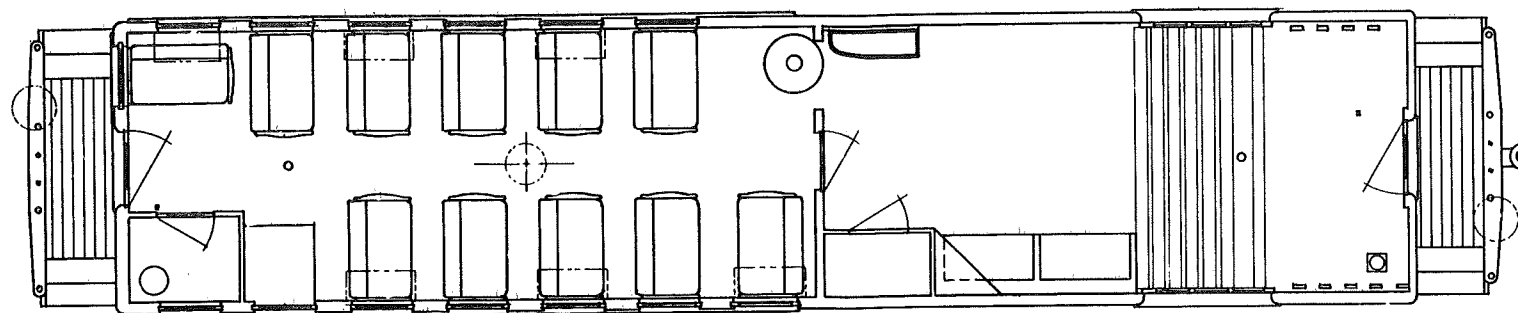
APPENDIX E:
DRAWINGS OF THE CAR



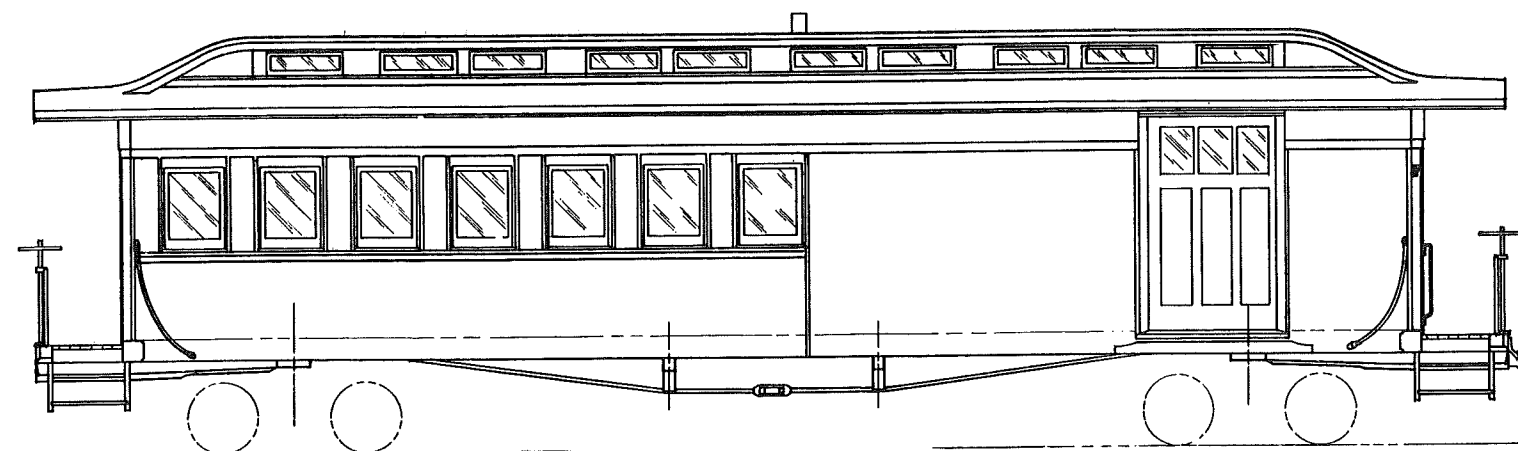
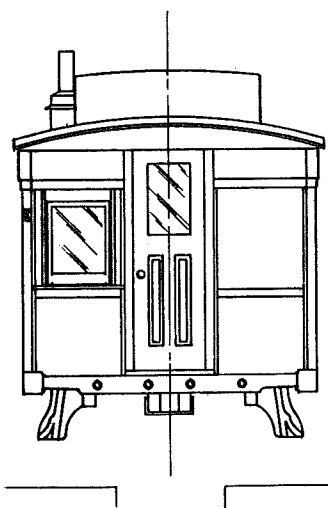
M AND S V COMBINE
WITH 9 WINDOWS



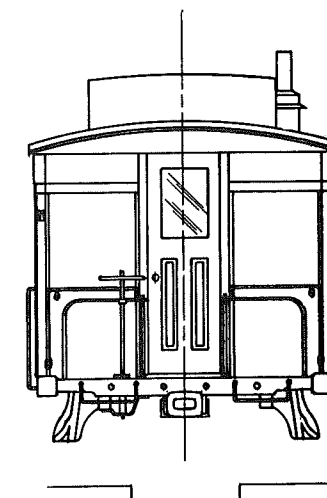
BULKHEAD
COACH



ELEVATION
BAGGAGE SECTION



M AND S V COMBINE
WITH 7 WINDOWS



RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF PARKS AND RECREATION

MONTEREY & SALINAS VALLEY RR
COMBINE No 1
GENERAL ARRANGEMENT: MAR. '77

DRAWING No.
424-D
100

SHEET No.

1 of

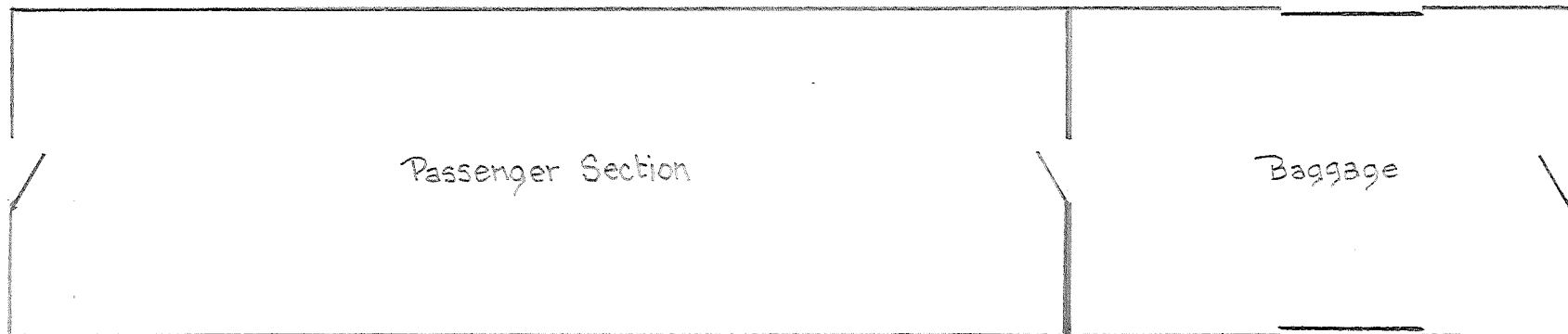
DESIGNED
DRAWN
L. GOOD
CHECKED
W. R.

DATE

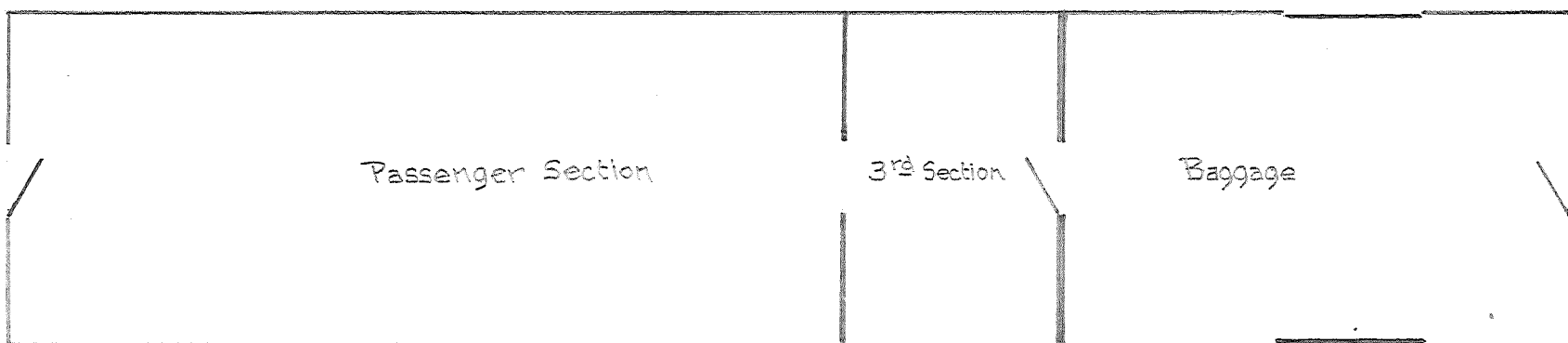
REVISIONS

DATE

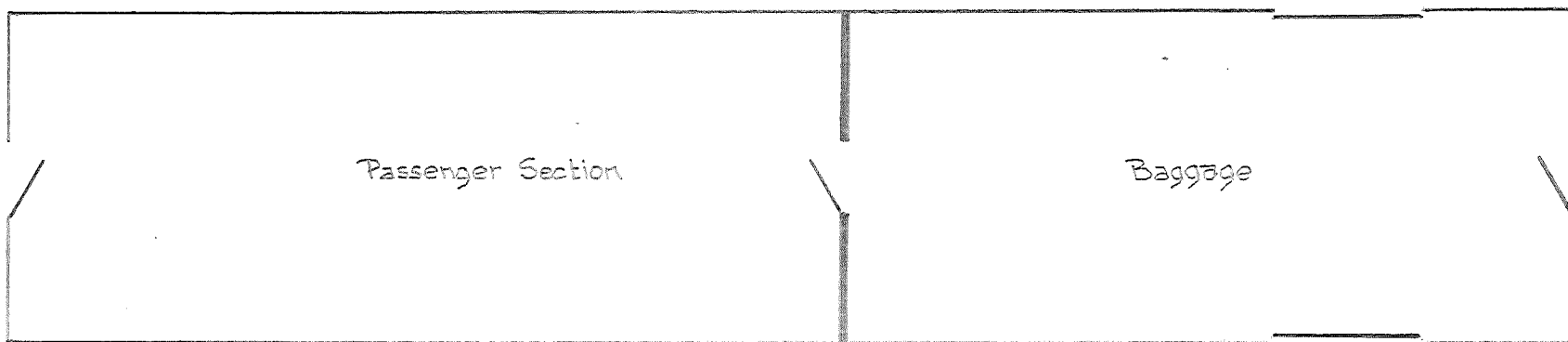
APPROVED



As built by Carter Bros. -1874



After alteration by M. & S.V. Shops
circa 1878-1886



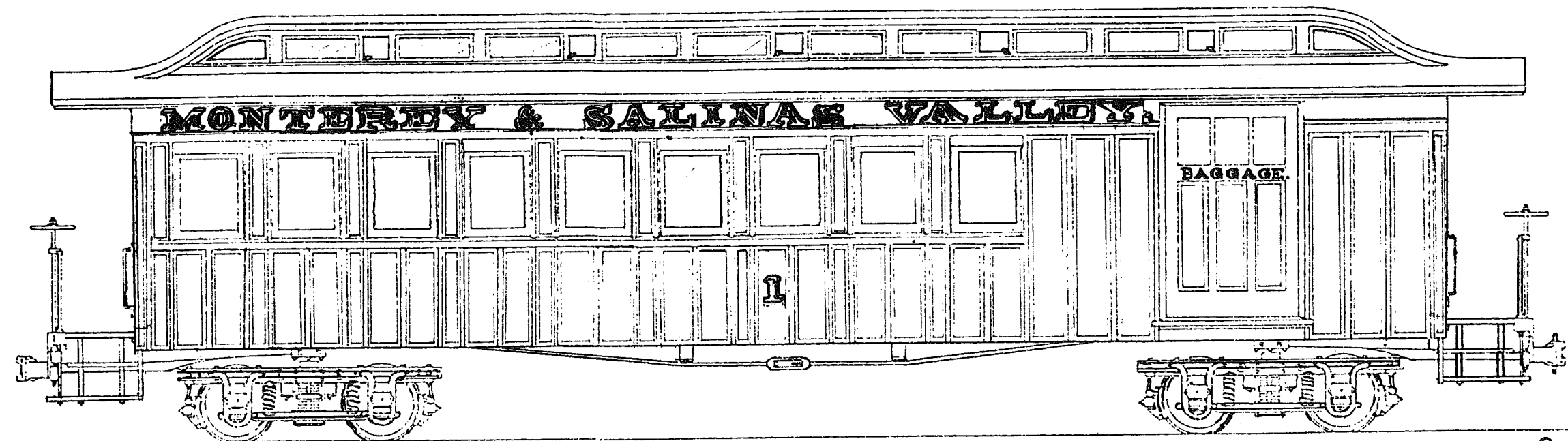
After alteration by Battle Mtn. Shops
circa 1886-1977

Monterey & Salinas Valley Combine N° 1

APPENDIX F:
LETTERING STYLES

MOST &

Serif Lettering as used on letterboard, circa 1870.



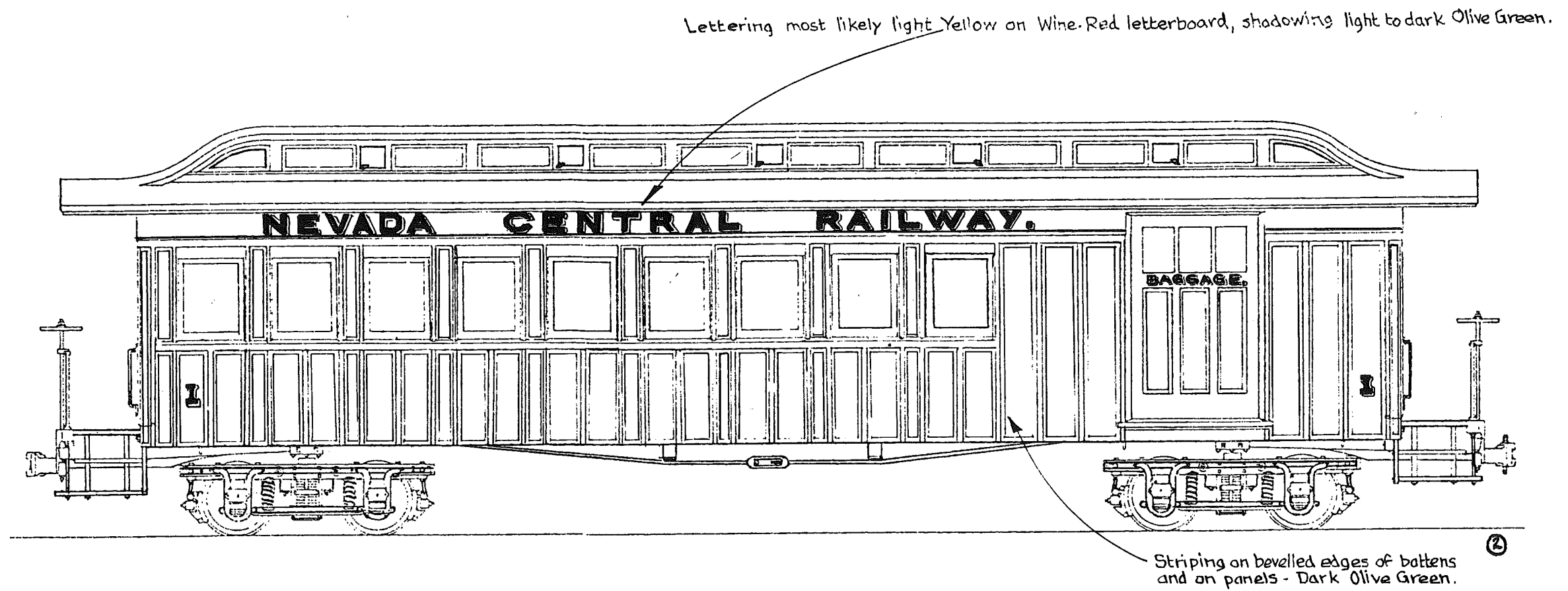
- Not to Scale -

ARTIST'S RENDITION ONLY

Above is a typical 1870's lettering scheme as applied
to Monterey & Salinas Valley R.R. Combine N°1.

There are no known photographs of this car circa 1874-79.

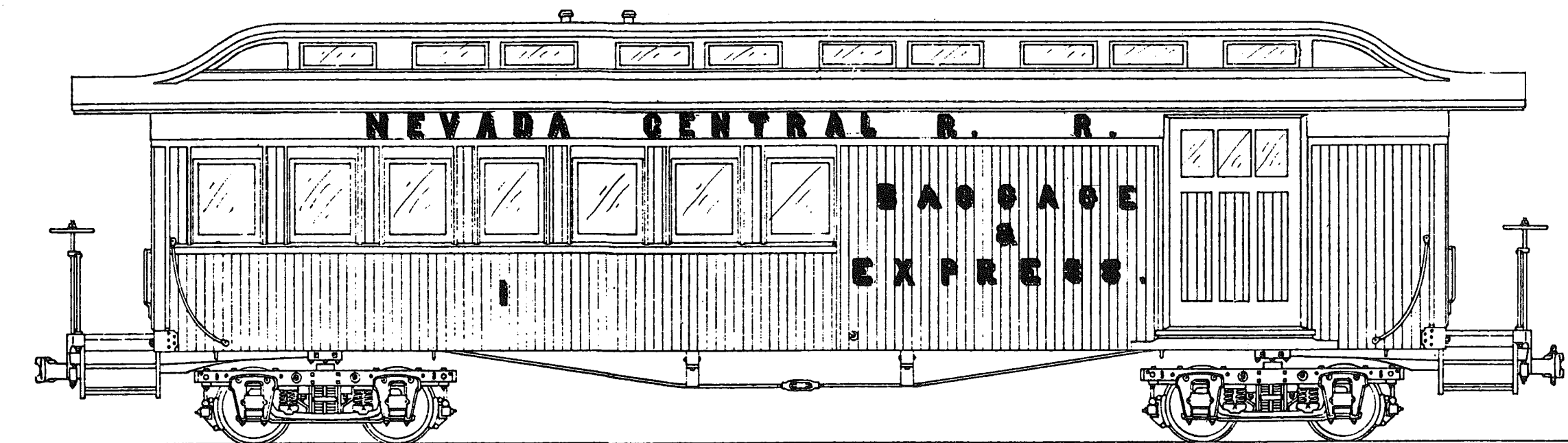
LATER RESEARCH SHOWS THIS LETTERING SCHEME
TO BE INCORRECT
(SEE BODY OF REPORT)



- Not to Scale -

First paint applied for Nevada Central Ry. - Circa 1880

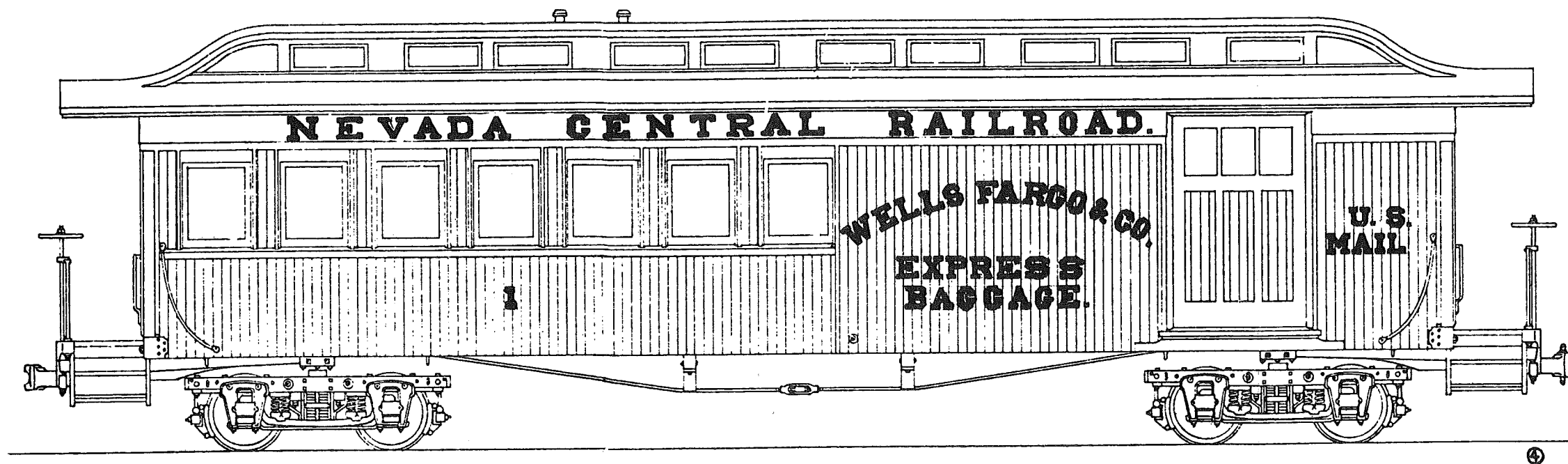
Overall body color Dark Red (?), lettering color unknown.



③

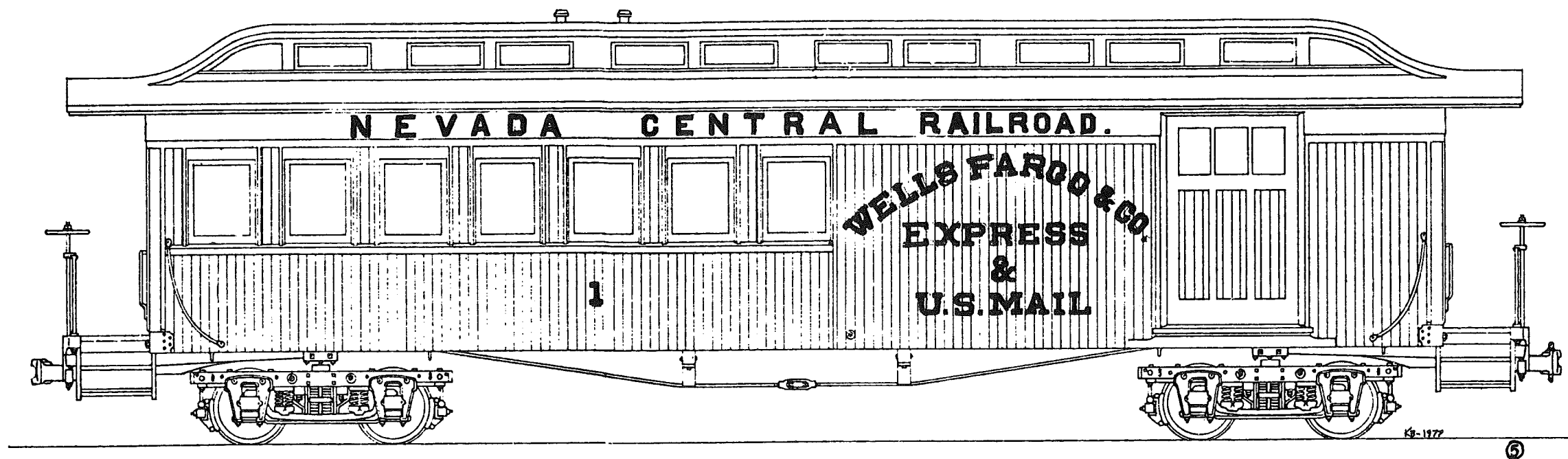
- Not to Scale -

Circa 1901 - Nevada Central Railroad

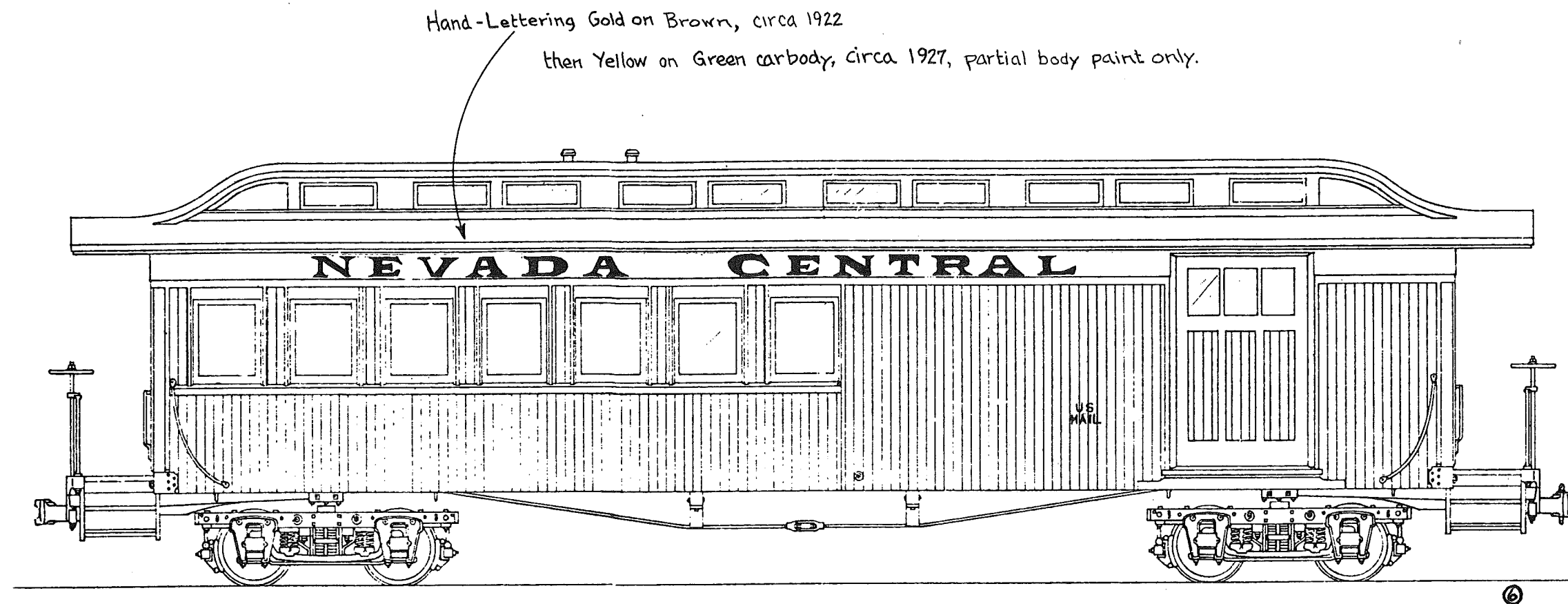


- Not to Scale -

Circa 1907

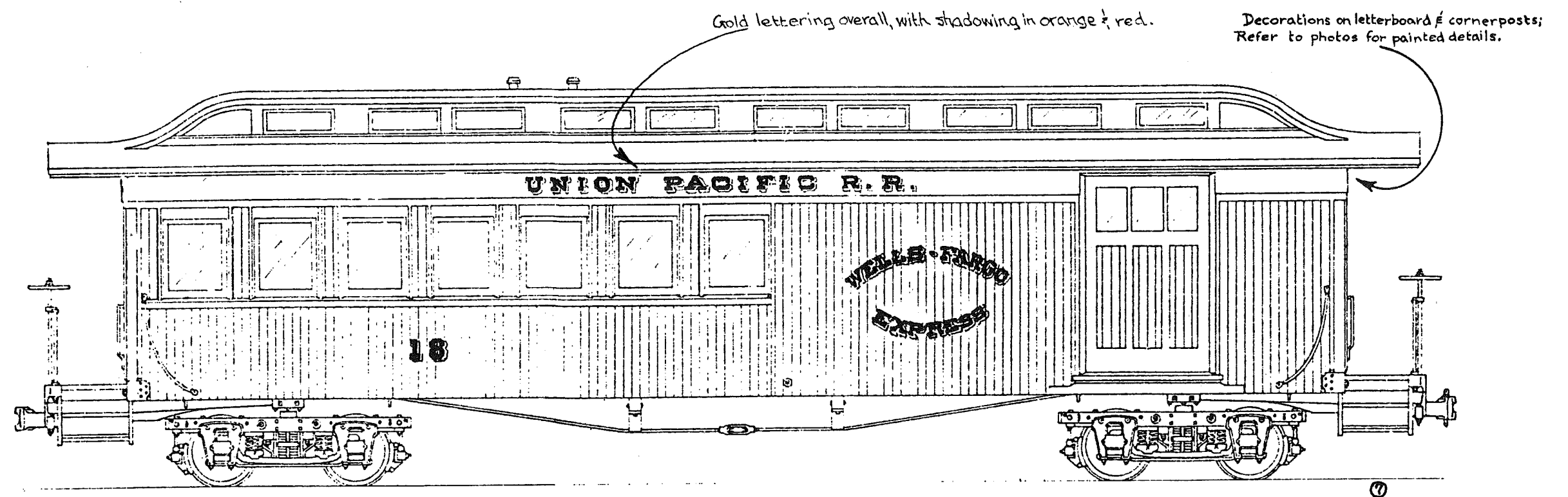


- Not to Scale -
Circa 1913

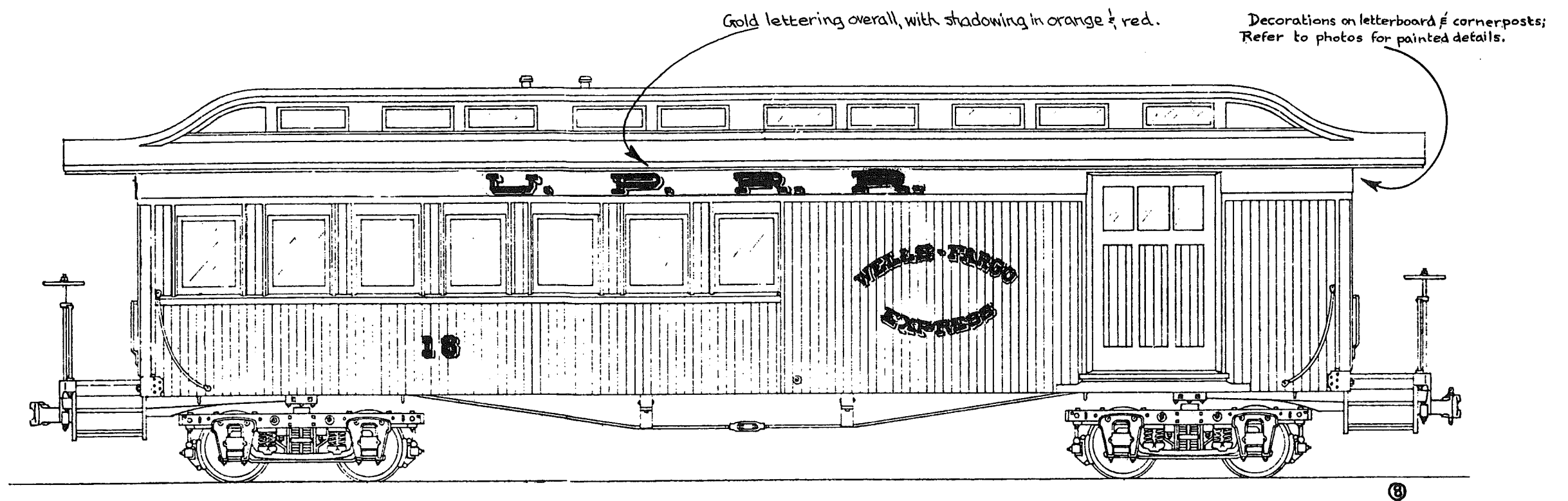


- Not to Scale -

Last paint applied by Nevada Central R.R. Circa 1927 to 1938.

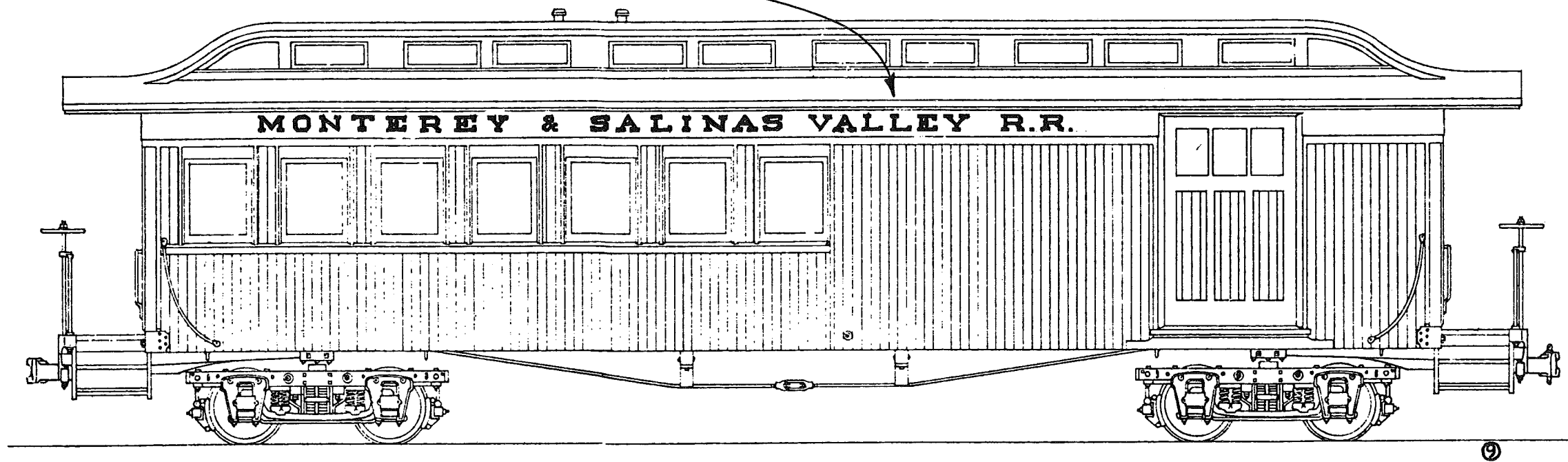


- Not to Scale -
 Circa 1939
 as painted for "Cavalcade of the Golden West" exhibition.
 Dark Green carbody, Dark Red letterboard.



- Not to Scale -
 Circa 1940
 as re-lettered for "America! Cavalcade of a Nation."
 Body colors same as in 1939 exhibition.

Lettering Silver on solid dark Red car body; letterboard was sprayed Silver, letters were masked-out w/ one-inch tape then oversprayed w/ Red.



- Not to Scale -
Circa 1965 - Painted by R.É LHS.-PCC.

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